

FLIGHT

The
AIRCRAFT ENGINEER
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1307. (Vol. XXVI.) 26th Year.
No. 2.

JANUARY 11, 1934

Weekly, Price 6d.
Post Free, 7½d. Abroad, 8d.

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2

Telephone: (2 lines), Holborn 3211 and 1884.

Telegrams: Truditur Westcent, London

Subscription Rates, Post Free.			
UNITED KINGDOM		OTHER COUNTRIES	
	s. d.		s. d.
3 Months ..	8 3	3 Months ..	8 9
6 " ..	16 6	6 " ..	17 6
12 " ..	33 0	12 " ..	35 0

CONTENTS

	PAGE
Editorial Comment:	
We Want	23
Misr	24
A Yorkshire Sunrise	25
Cruising to Australia and Back	26
Air Transport: The South American Services of Air-France	28
From the Clubs	31
Airport News	32
The Second International Egyptian Aviation Meeting	33
The Napier "Rapier"	38
Airisms from the Four Winds	40
New Blackburn "Segrave"	42
Armstrong Siddeley and Armstrong Whitworth Developments in 1933	43
The Industry	44
Royal Air Force	45
Correspondence	46

EDITORIAL COMMENT



HAT do we want to see happen in 1934?

It is useful to put our pious hopes down on paper at the beginning of a new year. We hope for a year of steady progress, of more flying, of safer flying, of better flying. We hope to see all the air services thronged with passengers, mails, and goods, travellers and consigners alike being convinced that the airway is the best way.

Let us particularise. There are certain definite things which we want to see happen in civil flying, and certain other things which we desire for the Royal Air Force. We will give pride of place to the Service. Very definitely we want to see a beginning made towards the completion of the 1923 programme of air defence. We are 10 squadrons short of that programme, and perhaps it is too much to hope that the whole of this shortage will be made up in one financial year. We must not forget our other lively hope, namely, of a reduction in the income tax. But we do want to see at least most of those 10 squadrons raised during the coming year. There has been talk of only three or four! Let us hope this is but a beginning. In addition to this, last year No. 100 (Bomber) Squadron, which flies Vickers "Vildebeeste" torpedo-planes, has been transferred from the Home Establishment (Coastal Area, to be exact) to the Far East Command, and has gone to Singapore. That leaves a gap in the Home Establishment, which must be filled by raising a new squadron, and this squadron will not represent any increase in our Home strength.

We want to see during the year more night-bombing squadrons provided with modern types of machines, at least one fighter squadron equipped with the Gloster "Gauntlet," and several flying-boat squadrons re-equipped with the Short "Singapore," the Supermarine "Scapa," and the Blackburn "Perth." We want to see the re-equipment of the Fleet Air Arm completed. At the same time the Royal Australian Air Force has decided on a measure of re-equipment with new types and is now considering which types to select. The Force needs a new type of general purpose machine and a new

DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

- 1934.
- Jan. 18. "Ethyl." Lecture by F. R. Banks, before R.Ae.S.
 - Jan. 19. Newcastle-on-Tyne Ae.C. Annual Ball, Barras Bridge Assembly Rooms.
 - Jan. 24. "Development of the Fleet Air Arm." Lecture by Wing Com. W. R. D. Acland, before R.U.S.I.
 - Jan. 30. Croydon Airport Annual Dinner and Dance.
 - Feb. 1. "Engine Cowlings." Lecture by J. D. North before R.Ae.S.
 - Feb. 2. Cinque Ports Flying Club Annual Dinner and Dance, Royal Pavilion Hotel, Folkestone.
 - Feb. 8. "Engines." Lecture by Capt. A. G. Forsyth before R.Ae.S.
 - Feb. 10. Services Rugby: R.A.F. v. R.N., at Twickenham.
 - Feb. 16. Bristol and Wessex Ae.C. Annual Ball, Grand Spa Hotel, Clifton.
 - Feb. 21. "Development of Aircraft and Its Influence on Air Operations." Lecture by Sq. Ldr. R. V. Goddard before R.U.S.I.
 - Feb. 22. Herts and Essex Ae.C. Annual Dinner and Dance, Wharnccliffe Rooms, Hotel Gt. Central, London.
 - Mar. 15. "Some Developments in Aircraft Construction." Lecture by H. J. Pollard before R.Ae.S.
 - Mar. 21. "Some Problems of a Technical Service." Lecture by Wing Com. G. W. Williamson, before R.U.S.I.
 - Mar. 24. Services Rugby: R.A.F. v. Army, at Twickenham.
 - Mar. 29. "Results from the Compressed-Air Tunnel." Lecture by E. F. Relf, before R.Ae.S.
 - Apr. 27-May 6. International Aero Show, Geneva.
 - May 27. Deutsch de la Meurthe Cup.
 - June 1. Entries close at 12 noon for London-Melbourne Race.
 - June 30. Royal Air Force Display, Hendon.
 - July 3-9. 4th International Congress for Applied Mechanics Cambridge.
 - July 21-22. French Grand Prix.



INTERESTING NEW ISSUES : On the left is the Dutch "Special Flight" (30 c.) in dark green, and next are three of the Egyptian International Aviation Congress issue—10 m. violet, 13 m. red and 20 m. blue. (FLIGHT Photo.)

AIR POST STAMPS

By DOUGLAS ARMSTRONG

(Editor of "Stamp Collecting")

Aviation Congress Stamps

According to custom, the meeting of the International Aviation Congress in Cairo last month was made the occasion of a special issue of stamps by the Egyptian post office in appropriate designs and inscribed with the title of the event in French and Arabic characters. The three vignettes, representing respectively an Imperial Airways liner passing over the Pyramids, a Dornier flying boat following the course of the Nile and the *Graf Zeppelin* sailing over the desert, are effectively reproduced in photo-gravure, constituting attractive souvenirs of the 1933 convention. These stamps were on sale for ten days only from December 20 to 30 last, and only one hundred thousand sets were printed and issued for the occasion. They comprise 5 millimes yellow brown, 10 mills. violet, 13 mills. terra-cotta, 15 mills. dull purple, and 20 mills. bright blue, the total face value amounting to a trifle under 1s. 6d.

Air Mail Week in Nicaragua

With the object of fostering public patronage of the air mail service in the Central American Republic of Nicaragua, an international air mail week is organised each year. During this period distinctive stamps are provided for franking air-borne correspondence, as part of the general propaganda. The International Air Mail Week for 1933 took place between November 6 and 11, when stamps depicting the winged wheel of Icarus speeding over Lake Xolotlan were on sale in denominations 10 centavos brown, 15 c. violet, 25 c. red, and 50 c. blue, the issue being limited to 2,500 series.

Canada's Latest Air "Etiquette"

The latest development of the Canadian Airways system is a regular service to and from the newly discovered gold-fields of Ontario, where, in the absence of a government contract, letters are carried free of charge by the operating concern, which attaches a picturesque "sticker" printed in orange and green with a design of an aeroplane passing over a forest of fir trees, with the flying goose insignia in one corner and inscription "Special Air Mail Service." The label itself has, of course, no franking value and postage is prepaid in regular Canadian postage stamps in the ordinary way.

Holland—Java Air Mail

Misfortune befell the aeroplane carrying the Christmas air mail from Amsterdam to Batavia, consisting of some 50,000 letters bearing the special triangular air mail stamp shown in our illustration. The aeroplane, *Postjager*, which left Amsterdam on December 9, was forced down by engine trouble at Brindisi, and the mail had to be sent on by sea to Cairo, where it was picked up by one of the regular aeroplanes on the K.L.M. service, too late to reach the Dutch Indies in time for Christmas, however. It is understood that when repairs to the *Postjager* have been completed, she will proceed to Bandoeng and bring back the special mail which is awaiting her arrival. Letters carried on this flight will therefore have a special interest for collectors of "accident covers."

Another Air Stamp Record

An indication of the keen competition that exists among collectors for the scarcer varieties of air post stamps may be gathered from the fact that the highest figure realised by a single "lot" at the sale by auction in New York of the world-famous "Hind" collection of United States

stamps was \$12,000 for a mint block of four of the exceedingly rare 24 cents air mail stamp of 1918, showing the error "centre inverted." Generally speaking, the demand for air post stamps of every description has been well maintained during the past year, despite economic and financial difficulties, and stamp market experts predict an all-round rise in prices with the return of more favourable trade conditions and easier money in the near future.

West Indian Air Stamps

The neighbouring republics of the island of San Domingo have both indulged in new issues of air mail stamps in the latter part of 1933. For use on inland air mail letters in the Dominican Republic a supply of the regular 2 centavos postage stamp received the distinguishing imprint "Correo Aereo Interior," whilst in connection with the international air mail service a 10 centavos stamp, locally printed in deep blue with a vignette of a seaplane passing the Ozama fortress, was taken into use about the same time.

From the Black Republic of Haiti come two handsomely engraved air post stamps of 50 centimes orange and 1 gourde blue in a striking pictorial design showing an aeroplane flying over the ruins of the ancient Citadel of Port au Prince.

Air Stamps in Prospect

Every now and again there have been rumours of an impending issue of air mail stamps in Jugo-Slavia. Matters have now progressed so far that the subjects of the designs have been finally decided upon by a selection committee, so that the actual stamps may be expected to appear during the coming year, adorned with pictures of aeroplanes over local scenes, their respective face values being 50 paras, 1, 2, 3 and 10 dinars.

New issues of air stamps are also foreshadowed from the Belgian Congo, Liechtenstein and the Italian colonies.



NEW COMPANY REGISTERED

BRITISH PROCESSES SYNDICATE, LTD., 355, Bank Chambers, 329, High Holborn, W.C.1.—Capital £5 in 1s. shares. Objects:—To acquire interests in inventions relating to anodising, treating or colouring aluminium and aluminium alloys and castings, by electrolysis or any other method, etc. Directors:—William F. Harkness, 329, High Holborn, W.C.1 (director of Domestic Appliances, Ltd.); James Horsfall, 43, Fitz James Avenue, Kensington, W.14, aeronautical engineer; John M. Richard, 39, Holborn Viaduct, E.C.1, electrical engineer; Sidney R. Sheppard, Woodfield, Lynwood Road, Redhill, chemist; Paul J. White, 56, Clifton Court, N.W.8, merchant.



PATENT AERONAUTICAL SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1932

Published January 4, 1934

- 12,827. BENDIX AVIATION CORPORATION. Choke control for carburettors. (402,763.)
- 15,491. C. CHURCHILL & Co., LTD., and F. C. CLEMENSON. Machines for milling and/or grinding propeller blades. (402,768.)
- 16,543. VICKERS (AVIATION), LTD., and T. S. DUNCAN. Braking systems for aircraft. (402,833.)
- 22,389. I. BOWEN. Cameras for use on aircraft. (402,890.)
- 23,286. R. H. MAYO. Means for launching aircraft. (402,895.)
- 35,243. K. ASANO. Devices for testing aeroplanes. (402,939.)
- 36,329. FAIRLEY AVIATION Co. LTD. D. L. H. WILLIAMS and F. H. ORIDGE. Means for actuating servo-operating controlling-surfaces. (402,941.)

APPLIED FOR IN 1933

Published January 4, 1934

- 1,311. R. H. MAYO. Means for launching aircraft. (402,951.)
- 11,744. J. L. M. O. DE CHAPPEDELAINE. Aeroplanes with rotatable wings. (402,992.)
- 12,310. R. H. MAYO. "Composite aircraft. (402,997)

amphibian, prepared for catapulting, for use on the seaplane carrier *Albatross*. We hope to see this programme carried out during the coming year.

That is not an extravagant programme of hopes, and we shall be grievously disappointed if it is not completed in full before 1934 has become history.

Turning to civil flying, we want quite a number of little things. Chiefly we want more speed, higher cruising speed for British civil aircraft. It can be done, we are convinced. American designers have done it, and what they can do we can do. We have dabbled in a degree of speed, for the Air Ministry ordered one mailplane, but that has been crashed. What is to be our next step? We cannot leave matters where they are. The Director of Civil Aviation in India, for example, demands a machine with an average cruising speed of 175 miles an hour to carry mails daily between Bombay and Calcutta. He wants five machines of that sort for a start, and it will be only a start. More will soon be needed; for once mankind has tasted speed it becomes like a tiger which has tasted blood, and never loses the thirst for it. Then there is the MacRobertson international race to Australia. That calls for high cruising speed, and we British have as yet no machine which is likely to beat the American entrants. Are we to celebrate British enterprise in colonising Victoria and building Melbourne by showing the world that foreign machines are faster, not than the best which Britain can do, but than what Britain has done? That would be a poor advertisement of Imperial pride.

In Great Britain we want to see more airports and landing grounds. The Prince of Wales wants more of them, and he has voiced the demand of the people of this country. We are not at all sure that we want to see, as yet, an aerodrome built across the Thames. That noble river as it passes through London needs ventilation. We should not like to see (and probably we should not like to smell) old Father Thames cribbed, cabined, and confined. A tube connection between Croydon and central London would be preferable.

Lower landing speeds, which we are learning are not incompatible with high cruising speed, may yet do much to solve the problem of central aerodromes in some cities, and we have not yet seen the full development of the Autogiro. A passenger Autogiro, to carry five passengers, has been ordered by the Air Ministry, but has not yet made its appearance. We want to see it in the air in 1934.

Very particularly we want to see the Eastern airway, which has already reached Singapore, extended to Australia. That we feel assured will happen before the year is out. The Australian Government has published the terms of contract and is awaiting tenders. Perhaps it has already received some. We make no secret of our opinion that the best thing which could happen would be for the main contract from Singapore to Cootamundra to be secured by the company which is being formed by Imperial Airways and Q.A.N.T.A.S. We hope, however, that this company will not for long remain contented with a time of transit which exceeds a fortnight. Monopolies and subsidies may militate against high cruising speed, but wise policy will see to it that something better than the necessary minimum is provided.

At home we want to see some definite results from

the deliberations of the Gorell Committee on civil flying, and we want those results to be prompt. Judicious liberation of civil flying from over-control should result in the production of some low-powered cheap aeroplanes, which would provide lots of fun for people in the British Isles, and would surely lead to a general increase of flying, which is what we all want.

We want to see further advance in the production of British flying boats. As the Americans seem very keen to make the first experiments in an air service between the United States and Bermuda, it may not be unwise to allow them to make the first efforts and amass experience from which everyone will benefit. We have not yet got a boat which can fly across the Atlantic by the Azores-Bermuda route with a remunerative pay-load, and it may be that the increase of structure weight in large sizes will continue to prevent the production of the commercial Atlantic boat. At the least we must watch all developments, and if a real opportunity occurs we must be prepared to take advantage of the central position of Bermuda.

Finally, we want very earnestly to see something really constructive done about the peril to aircraft from pylons and cables. The last year went out with a terrible tragedy in the crash of the *Apollo*, and our Croydon correspondent keeps on manfully reminding the authorities that a very dangerous beacon mast has been erected on the London aerodrome, that aerodrome which we should like to think was a model of what an airport should be. What we do not want in 1934 is more tragedies to civil aircraft.



Sir Frederick Sykes once described Cairo as the future Clapham Junction of the air. Some people laughed at him, but Sir Frederick was rarely wrong. He was only ahead of his time. The recent flying

meeting held in Egypt, or Misr (to give the land its Arabic name), which has been faithfully reported in these

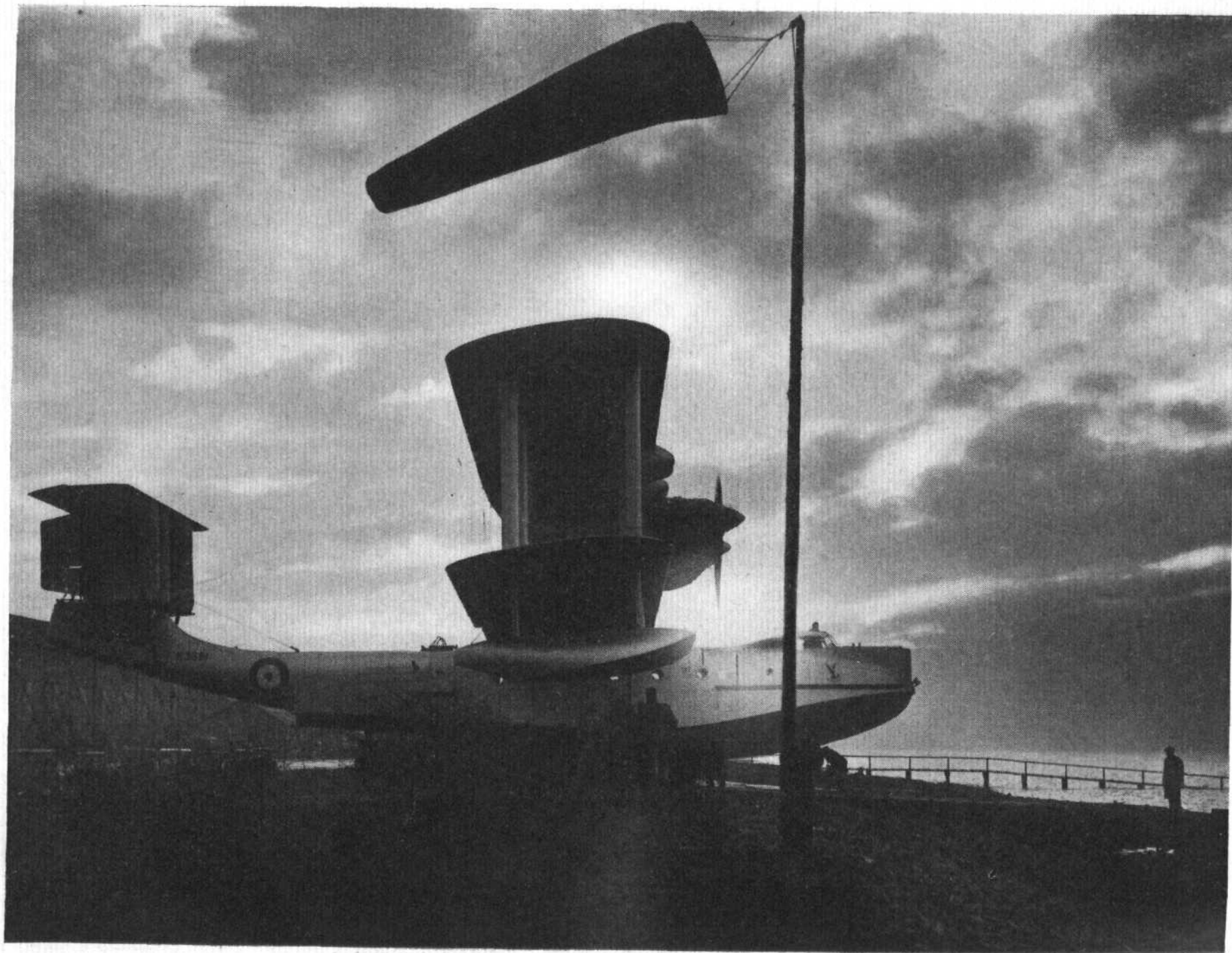
columns by our special correspondent, has drawn attention to the importance of the country from a flying point of view. The meeting was organised by a committee, working under the Aero Club of Egypt, to celebrate the holding in Cairo of the annual Congress of the Fédération Aéronautique Internationale. Naturally, it was an international meeting, and we may feel proud that the principal race was won by a British pilot in a British aeroplane.

This gathering at Cairo of air sportsmen of many nations drove it home to everyone that Egypt is the land where the air routes to Europe, Africa, and Asia all meet. Imperial Airways once for a while tried the experiment of cutting Egypt out of the Europe-Asia route, and flew direct from Greece to Palestine, but the experiment was abandoned, and now both the great airways make direct for Cairo. Incidentally, the meeting coincided with another memorable event, for the "*Scipio*" flying boat, in which our special correspondent left Brindisi, did not stop at Alexandria and there send its passengers and mails on to Cairo by train, but for the first time flew on and landed on the Nile in the very heart of the city, thus saving about three hours of travel.

The meeting was a very successful one, and we are glad to hear that it is to become, in one form or another, an annual event.

A YORKSHIRE SUN-RISE: Launching the second of the four Blackburn "Perths" (Rolls-Royce "Buzzard II MS") at Brough on January 5. After the usual half-hour's flight by the company's test pilot, Mr. Blake, the machine was handed over to a R.A.F. crew from Mount Batten, who, under the command of Sqd. Ldr. J. H. O. Jones, of No. 209 (Flying Boat) Squadron, flew the machine non-stop to Plymouth, where it arrived the same afternoon.

(FLIGHT Photo.)



WINGS OVER MELBOURNE : *The Spartan "Cruiser" (three "Gipsy Majors") chartered by Capt. W. P. Crawford Greene, flying over the modern and well-planned Australian City of Melbourne*



"CRUISERING" TO AUSTRALIA

WHAT is probably one of the longest charter flights ever made was completed when, on December 26, Mr. P. W. Lynch-Blosse arrived back from Australia in a Spartan "Cruiser" (three "Gipsy Majors"). The machine had been chartered by Capt. W. P. Crawford Greene to go to Australia and back. Capt. Crawford Greene is an M.P., and he left his constituency at Worcester on October 9 with Lord Apsley and a mechanic as the other passengers. They did not hurry on the journey out and, flying steadily on by comparatively easy stages over the now well-used route, arrived at Sydney on October 30.

The journey out was devoid of incident except when some 40 miles beyond Samarang one engine stopped suddenly. Flying on the other two engines—a simple matter with full load in the Spartan "Cruiser"—Mr. Lynch-Blosse took the machine back to Samarang, and after landing discovered that a swallow, with its body completely denuded of feathers, was wedged in the air intake.

An item of interest to others flying on this route is the fact that, according to Mr. Lynch-Blosse, the correct aerodrome to be used at Brindisi is that which is situated inside the prohibited area and is readily distinguishable by virtue of the large airship shed on it.

After Samarang and Sourabaya the journey to the Australian coast was without incident, Mr. Lynch-Blosse has had considerable experience of flying over the water

between Australia and Tasmania before he came to this country, and was therefore easily able to check his drift, etc., and to make an accurate landfall.

Apparently one of the "stickiest" parts of the journey was that from the Australian coast to Cloncurry. The country is very flat, devoid of landing marks and broken with creeks which are not on the map. It is therefore essential, we understand, to follow the main stock-route. Along this there are possible landing grounds, and the track is marked with windmills, besides which there are aerodromes at about 100-mile intervals. To get away from the track is fatal, besides being unfair to the inhabitants, who would be put to a very great deal of unnecessary trouble to rescue a pilot should he make a forced landing. After Cloncurry the route is more populated and there is more water, making the journey on to Brisbane an easy and delightful one.

After this the "Cruiser" carried on down the coast to Sydney, a coast which is said by many pilots to be the most beautiful in the world. From Sydney the "Cruiser" went on to Deniliquin over interminable wheat country and so through to Adelaide. Continuing on, a night was spent in the West Australian Airways' rest house at Forrest.

The route from Kalgoorlie to Forrest is exceptionally well laid out, with beacons and landing grounds and is thoroughly equipped for night flying.

At Derby a detour was made for a flight over the country which was recently suggested for new settlement. Mr. Lynch-Blosse tells us that it appeared to be extremely inaccessible, covered with hills, making it difficult for any cattle to reach water, and altogether not a very hospitable place.

From Derby the "Cruiser" set straight out across the sea for Koepang. On this leg it passed through extremely heavy rain, so heavy that the occupants of the machine wondered whether the stories they had heard of aircraft engines being stopped by sucking neat water direct into their air intakes were true. Perhaps readers would like to send us their experiences on this point.

Past Rambang and Komodo, where unfortunately not one of the traditional dragons was seen, the route lay on to Singapore. Here an incident which occurred to one of the Singapore Flying Club's "Avians" is worth recording. The seaplanes of the club were flying in formation one day, when the airscrew of one burst.

This immediately broke the engine mounting, and the engine fell forwards and downwards. Luckily for the pilot, it, however, remained lodged on the toes of the float and thus did not disturb the balance of the machine sufficiently to prevent him making a safe landing.

After reaching India the "Cruiser" was taken down to Madras, where a cyclone broke while the machine was pegged out on the aerodrome. Seventeen inches of rain



PILOT AND PASSENGERS: Left to right, Mr. P. W. Lynch-Blosse, Capt. W. P. Crawford Greene and Lord Apsley. The other member of the crew is doing a job of work in the cabin.

fell, and all shipping had to leave the harbour, but the "Cruiser" stood it nobly and was not damaged in any way.

Mr. Lynch-Blosse tells us that, despite prevalent ideas, he did not experience any appreciable loss of performance in Australia. This he attributes to the fact that the wings of the "Cruiser" are probably somewhat above the superheated layer of air which is to be found close to the ground in hot countries. This is not to say that there was no loss at all, because naturally there would be, but it was not sufficient to worry an operator in any way.

After Madras the machine went on to Bombay, and there Capt. Crawford Greene left, leaving Lord Apsley to journey on alone. Back at Athens, the "Cruiser" ran into bitterly cold weather, and a prolonged stay was necessary in order to remove the oil coolers and to get the lubricating oil system functioning satisfactorily. From Athens onwards to Lyons the weather experienced was not too bad, but after Lyons the clouds were down on the ground, necessitating a great

deal of blind flying. Mr. Lynch-Blosse avoided the accepted continental route and made a landfall near Clacton, finally landing on the beach at St. Osyth. He tells us he would like to pay tribute to the excellent service given to him by the Shell organisation for the supply of fuel and oil throughout the trip, and also to the assistance he received in the matter of carnets, permits, etc., from the Touring Department of the Royal Aero Club.



HOMEWARD BOUND: The *Faithful City* photographed at Almaza Aerodrome, Cairo, on its way home. (FLIGHT Photo.)



Aeroplanes and archæology

THE National Museum of Ireland are again seeking the co-operation of the Free State Army Air Corps in the undertaking of an archæological survey. Some time ago the Air Corps surveyed several sites for the museum and Mr. Liam Gogan, the director, was able to add considerably to the general knowledge about ancient Irish forts from the photographs. Now the burying ground of Bearna, one of the first Irish kings, is believed to have been discovered in County Meath, and it is thought that an aerial survey of the district will reveal some of the most important archæological information which has been found in Ireland for many years.

A Polish trainer

A NEW two-seater wooden training machine, the WK-3, which has been designed and built by a young

Polish engineer, Mr. Wladyslaw Kozlowski, has been tested during the last few days. The following are the main data applying to the aircraft:—Span (top) 30.8 ft., span (bottom) 29.5 ft., overall length 22.6 ft., height 9.9 ft., weight empty 770 lb., useful load 506 lb. and gross weight in flying order 1,540 lb.

A new fast Wibault

NEXT month the French Wibault works hope to complete a new fast single-engined commercial machine, the type 365. The new machine is generally similar to the Wibault-360, but has a Hispano-Suiza 12 Ybrs. engine instead of the Gnome-Rhone K-9. It is of all-metal construction and is a cantilever monoplane. The cabin has accommodation for five passengers, and the enclosed cockpit has two seats side by side for the first pilot and the second pilot-navigator-wireless operator. With a range of 620 miles the Wibault-365 is said to have a top speed of 251 m.p.h.!

AIR TRANSPORT & COMMERCE

THE SOUTH AMERICAN SERVICES OF AIR-FRANCE

By G. A. HINKSON

ON October 7, 1933, the Compagnie Générale Aéropostale (Latécoère), which for five and a half years had maintained the air-mail service between Europe and South America, ceased to exist as an independent company, and became merged in the combine Air-France. The decision to unite all the French air companies with a single organisation followed a similar development in other important European countries. Thus, Great Britain is represented by Imperial Airways, Germany by the Deutsche Luft Hansa, Holland by the K.L.M., and Belgium by the Sabena. The other companies included in the French combine are Air Orient, Air Union, Cidna, and the Farman Company.

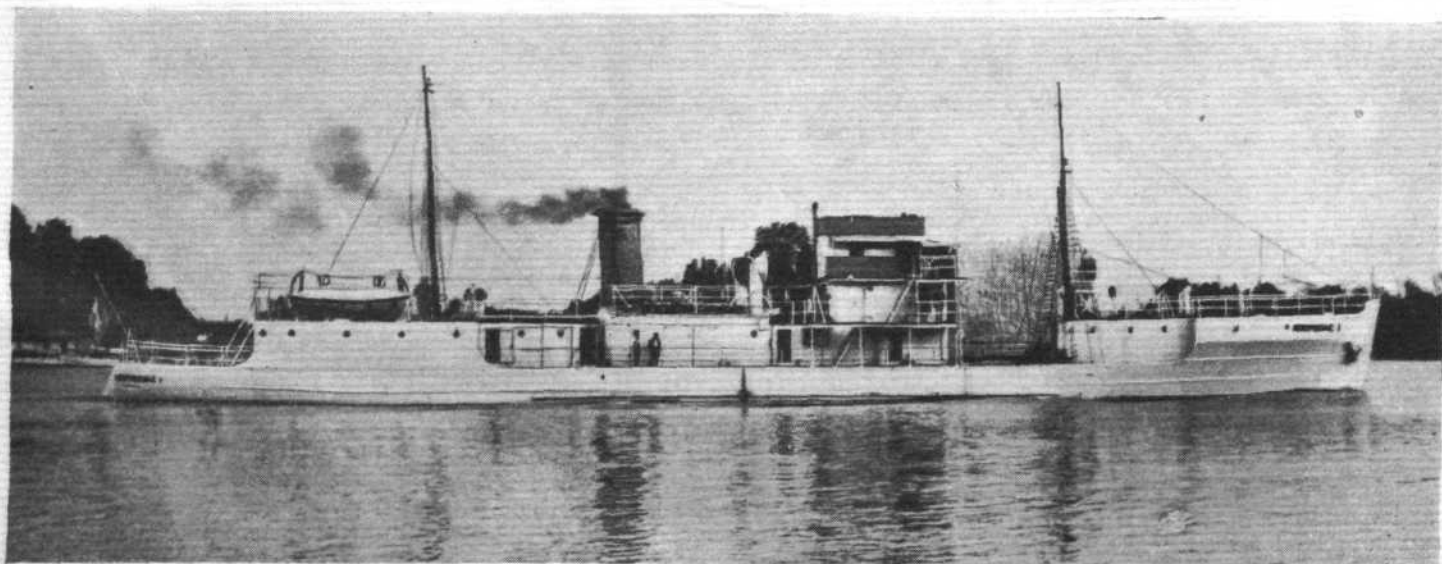
In view of the enormously increased importance of commercial aviation there is little doubt that the new organisation will prosper. But as regards South America it was the old Latécoère Company which carried the banner of progress at a time when civil flying was yet in its infancy. Its achievements in fifteen years have been striking. In September, 1918, while the World War was still raging, M. Latécoère approached the French Government with a scheme for the creation of an aerial postal service between France and South America, the route passing over Morocco and French West Africa. Some time passed without any definite developments; but on Christmas Day, 1919, a regular air service was inaugurated as far as Rabat, on the Moroccan Coast. Six years later the route was extended to Dakar, in Senegal. The progress of the company then became rapid. M. Marcel Bouilloux-Lafont, a prominent French commercial and financial magnate with widespread business interests in France and in South America, now took an active part in the fortunes of Latécoère Company. On March 1, 1928, the ten-year-old dream of M. Latécoère materialised and a regular weekly mail service from Toulouse to Buenos Aires began functioning, thus bringing Argentina within a



MOVING LANDMARKS: A camel caravan crossing the desert in Rio de Oro, as seen from an Air-France machine.

week's journey of Europe. In the existing stage of progress it was not possible for aeroplanes to cross regularly the 3,100 kilometres of ocean between Dakar and the Brazilian port, Natal. Accordingly, for this part of the journey a fleet of six small fast steamers was organised. These steamers were old naval patrol boats hired out to the company by the French Ministry of Marine and converted to commercial uses. Their names are *Revigny*, *Epernay*, *Reims*, *Lunéville*, *Peronne*, and *Belfort*. Each boat has a crew of six officers and twenty men, has a capacity of from 800 to 1,000 tons, is driven by steam turbines and can maintain an average speed of from 16 to 18 knots. The crossing from Dakar to Natal by steamer takes about 4½ days. On arrival at Natal the mails are transferred to another aeroplane which takes them on to Buenos Aires.

A more brilliant success for the Latécoère Company was still to come. In July, 1929, the line was extended over the Andes to Santiago de Chile. The difficulties of establishing a regular mail service in all weathers over the



THE MARINE EQUIPMENT: One of the fleet of small fast steamers which transport the mails between Dakar and Port Natal.

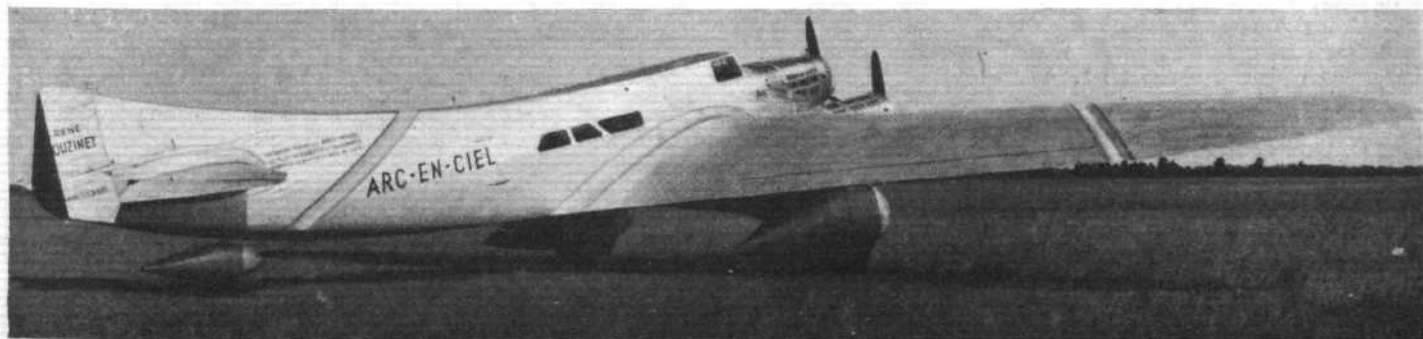


HAPPY LANDINGS—PERHAPS ! An Air-France airliner flying over Rio de Janeiro. As may be seen, the surrounding country is not particularly inviting.

second highest range of mountains in the world may be readily appreciated. The aeroplanes must be capable of flying up to a height of six or seven thousand metres. In the Andes sudden storms are frequent, and the lowest pass in these regions, the Pass of Uspallata, is 4,000 metres high. For safety, therefore, it is necessary to rise above the topmost peaks and surmount the clouds and the storms. Also there are the perilous descending currents found in all very high mountain ranges. Mermoz, one of the most renowned of the company's pilots, made a preliminary reconnaissance of the different passes of the Andes a few months before the Chilean service was opened. He was caught in an irresistible downward current and made a forced landing on an icefield in the frozen wastes of the Andes far beyond the reach of civilisation. There he remained with his mechanic in a temperature of 36 degrees F. below freezing point until two days later when, having repaired his machine, he was able finally to take off. He returned safely with his companion to Buenos Aires and reported to the company that it was dangerous to fly low over the mountains.

From Toulouse to Santiago de Chile the 'planes fly over three Continents and cross the territory of six nations. Three distinct types of aeroplane are required. For, apart from the fact that the ocean journey must still be accomplished by steamer, it would indeed be impossible for any single machine to make the whole

journey, owing to the enormous variations of climate. Thus when flying low over the Sahara desert the temperature is often more than 120 deg. F. in the shade (if there were any shade), while far above the Andes the mercury drops to - 60 deg. F. In the tropical rainstorms of the Brazilian coast metal propellers had to be substituted for the original wooden ones. It was found that the heavy raindrops continually striking the wooden propellers threatened to destroy them and provoke disaster. For each main stage of the journey a special type of machine suitable to the peculiar conditions must be used. In Brazil, too, the dense tropical vegetation of the virgin forest had to be removed to provide landing grounds, and almost as soon as it was cut away it began to grow again. The obstacles confronting these pioneers of the air were not limited, however, to climatic adversity. Flying over the Spanish Colony of Rio de Oro the 'planes were frequently fired at by the fierce tribesmen of the desert. It was in June, 1928, that the pilot Reine, accompanied by his engineer, was compelled by fog to make a forced landing on the sands of Rio de Oro. They were both captured by the Moors and held as prisoners for four months, during which time they suffered extreme hardship. Finally the company obtained their release through the intervention of the French and Spanish Governments. This incident created a delicate situation between France and Spain; for the Frenchmen felt, not without justification,



THE ARC-EN-CIEL : The three-engined Couzinet 70 monoplane, which has been designed for the Atlantic section of the route, in place of the fast steamers.

that Spain did not know how to govern her colonies, with the coming of the Republic in Spain relations between the two countries have become more cordial and of late there has been closer co-operation to protect the mail.

In spite of these dangers the Latécoère pilots proved their efficiency from the outset. For it is recorded that out of the first 192 mails to make the journey from Toulouse to Buenos Aires, or vice versa, 190 reached their destination; and of the two mails which were lost, one was subsequently recovered. With the increase of efficiency gained from experience one may assume that very soon the air route will be at least as safe as that of the steamer.

What a great saving of time for the business houses of all nationalities which trade between South America and Europe has been accomplished by the introduction of the air mail! Rio de Janeiro is to-day only six days from Europe instead of eighteen, Montevideo and Buenos Aires eight days instead of eighteen, and Santiago de Chile nine days instead of twenty-five. But something yet more wonderful is to come. For in a very short time the small fast steamers which to-day make the journey between Dakar and Natal will be replaced by special aeroplanes,

of which there will be three in all. The transatlantic stage of the voyage will then be reduced from four and a-half days to fifteen hours, the 'planes flying by night as well as by day. This new development will bring Buenos Aires within approximately five days from London. In the air it would seem that all things are possible.

I remember a personal incident which occurred when I was in Chile in the spring of 1930, and which goes to show that in South America, at all events, travelling by air is sometimes safer than by road. I had arranged to go by motor with a party of friends to the Pass of Uspallata, on the Argentine frontier. The previous day there was a storm in the mountains. One of the party consulted the meteorological adviser of the Compagnie Générale Aéropostale to ascertain if it were prudent to attempt the journey. The meteorological adviser informed him that he had just received news that snow was still falling in the mountains upwards of 3,000 metres, below which level it was then raining. He said that if it were raining it would be safe, though perhaps unpleasant, but that it would be imprudent to go above the snow-line. He added that "in any case, the aeroplane would leave for Buenos Aires at daybreak."

BETTER LATE THAN NEVER

THE Pander "Postjager" high-speed mail carrier (three Wright "Whirlwinds") which was delayed in Italy during a flight to the Dutch East Indies, through a defect in the oil system of one of its engines, resumed its flight on December 27. The machine took off from Athens on December 28 and reached Batavia on December 31. One night was spent at Singapore as information was received that no night landing equipment was in service on the island. The return flight started on January 5.

MARSEILLES-ROME SEAPLANE SERVICE

As from January 15, the S.A.N.A. (Società Italiana Servizi Aerei) will inaugurate a direct seaplane service from Marseilles to Rome in about three hours. It may thus be possible to leave London in the morning and arrive at Rome the same evening. Malta can be reached the following day at about 1 p.m., accomplishing the journey in 1½ days, and thus saving a full day over the shortest previous method of communication. There is no reason why, in the summer months, Malta should not be reached within 24 hours.

A SWEDEN-RUSSIA LINE

An agreement has been concluded between the A.B. Aerotransport, Aero O/Y and Deruluft air traffic companies for the operation of an airline from Stockholm to Leningrad, via Esthonia and Finland. The Leningrad-Tallin (Reval) leg will be operated by landplanes belonging to Deruluft, and seaplanes of the Swedish and Finnish concerns will be employed on the Tallin-Stockholm stretch. The Deruluft company will resume the regular operation of the Berlin-Leningrad service on May 1, 1934.

BOLIVIAN AIR TRAFFIC

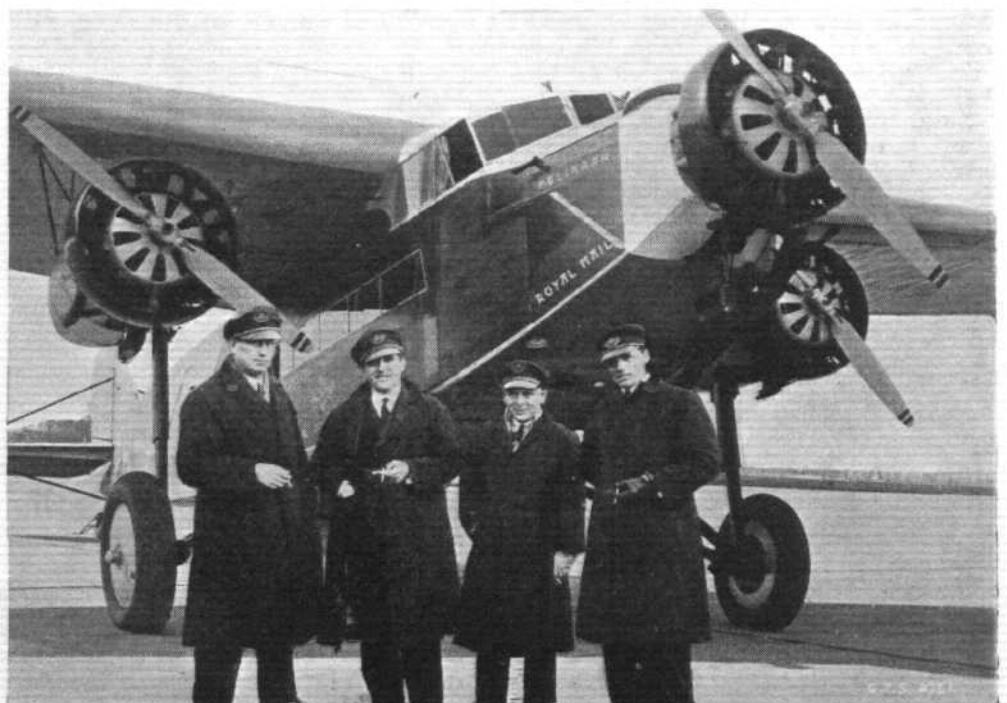
LLOYD AEREO BOLIVIANO, of Cochabamba, Bolivia, gives the following traffic figures for October, 1933:—144 flights, 303.10 flying hours, 35,700 miles, 1,293 passengers, 190,500 lb. freight and 2,205 lb. air mail.

FRENCH SERVICES TO AFRICA AND MADAGASCAR

THE route down to the Belgian Congo which will be operated jointly by the French Government and SABENA will be surveyed by M. Louis Couhé, the French Inspector of Civil Aviation. M. Couhé is to leave France towards the middle of January in a Nieuport 590 "Colonial" machine. It is fully realised in France that Madagascar must be connected to the international system of airways. Besides linking up with the Franco-Belgian service the new line would connect with Imperial Airways' route to Cape-town. "On the recommendation of René Lefèvre, who has flown over the route three times, two three-engined mail carriers are being prepared by the French Air Ministry. These aircraft, manufactured by the SPCA, will be fitted with 135 h.p. Salmson engines and will be shipped out to Madagascar shortly. The first flights should take place in May.

THE INDIAN AIR MAIL

THE Postmaster-General announces that in consequence of a rearrangement of the homeward time-table of Imperial Airways' England-India service in connection with the extension of the service to Singapore, the air mail from India will, until further notice, be due to reach London on Wednesdays instead of Tuesdays.



A SPLENDID RECORD: The crew of the K.L.M. Fokker F.XVIII, *Pelikaan*, in which they flew from Amsterdam to Batavia and back in record times. They are, from left to right, I. W. Smirnoff and P. Soer (pilots), J. M. H. Grosveld (mechanic), and C. H. van Beukering (wireless operator). Unfortunately, we published in last week's issue (page 11) an illustration which was stated to be the *Pelikaan*, but as a matter of fact the wrong photograph was inserted by mistake. Actually, the machine shown was the *Snip*—a sister plane on the same service. Sincere apologies!

FROM THE CLUBS

LONDON AEROPLANE CLUB

Flying time for the week totalled 28 hr. 55 min. Among new members the Club have pleasure in welcoming Miss N. M. Braithwaite, Messrs. Bengt Skeppstedt, L. Lelacheur and W. R. Meikle. Dr. A. Ritchie and Mr. A. H. Milne have completed tests for "A" licences.

HANWORTH (N.F.S.)

During the past week 23 hours were flown on club aircraft. Mr. Walters carried out his cross-country flight for a "B" licence. As the dinner and dance held on Saturday, December 30, was such a success, the next one is to be held on Saturday, January 27, and applications should be made to the Secretary for tickets.

THE HERTS AND ESSEX AEROPLANE CLUB

The Christmas festivities were very well attended, and after the well-catered-for luncheon on Boxing Day a Treasure Hunt was organised, competitors being given a list of 40 common articles which had to be acquired. The winners were Mr. "Buster" Frogley's party, Mr. Gordon Chapman's party being second. On New Year's Eve a parachute drop had been arranged from the Old Year into the New; fog, however, caused its cancellation.

The total hours flown during the year 1933 amounted to 2,261. Forty "A" licences have been obtained and three "B" licences. Recent new members are Messrs. Browne, Hill, Boyle, Gill, Vetch, Dineen, Faithful, Dash and Reynolds; the last named is a son of Mr. George Reynolds, the well-known timekeeper. On December 31 the Hon. Mrs. Victor Bruce paid a visit to the Club. Last week 20 hr. were flown and this week 16 hr. Next Sunday, January 14, the monthly competition will be held. Non-passenger-carrying pilots, whether Associate members or flying members, will act as navigators to passenger-carrying pilots. The new compass swinging base is nearing completion and will be a valuable asset to the navigation training which is being emphasised at Broxbourne. The clubhouse and premises are about to be extended to accommodate the rapidly-increasing membership. A central control tower is to be built and additional bedrooms will be added. For the quality of the catering at the clubhouse, which is becoming so popular, Mrs. A. R. Frogley is to be thanked.

YORKSHIRE AEROPLANE CLUB (N.F.S.)

The Club's flying time for the week amounted to 10 hours. On Saturday, January 13, a Children's Party will be held from 3 p.m. to 6 p.m.

READING AERO CLUB

To celebrate the advent of the New Year a very successful Tramps Party was held, and revelry was continued into the night. Flying times during the year 1933 for the Reading Aero Club and the Phillips and Powis School of Flying amounted to 1,862 hours, an increase of 209 hours on the previous year. Club membership rose to 150, and the Berks, Bucks and Oxon Aero Club was incorporated in the Reading Aero Club, bringing another 60 members. A Miles "Martlet" has been added to the School's machines, and is proving very popular. During the year the Club had pupils from Germany, France, Belgium, Norway, Sweden, Canada, India, Africa, Denmark, New Zealand, Ireland and Holland.

The Club "At Home," held in June, was marred by rain, but otherwise was quite successful. A "Ladies' Only" Meeting was held in the autumn. Dawn Patrols have been a very popular diversion, and certain members seem to have acquired quite a genius for obtaining free meals. Miles "Hawks" are in full production, and have already penetrated to the Dutch East Indies and to Central Africa. The 1934 model is an even better production, and is being turned out at the rate of about 1½ a week.

LIVERPOOL AND DISTRICT AERO CLUB

Flying times for the week ended Friday, January 5, amounted to 4 hours 50 minutes dual, 11 hours 10 minutes solo, and 2 hours 25 minutes night flying. The total for December being 69 hours 30 minutes, and the total for the

year 2,283 hours 5 minutes. Night flying took place on Friday, January 5, four members receiving instruction. Messrs. Clapham, W. Greenhalgh and W. Varley did very successful first solos at night.

NEWCASTLE-UPON-TYNE AERO CLUB

During the year 1933 a total of 1,328 hours flying was carried out on Club Aircraft, as compared with 1,106 hours flown last year. There have been 20 licences obtained. The total number of hours flown since the delivery of the first machine in September, 1925, is 9,500. The Club have three "Gipsy I Moths" and one Pilot Instructor. The flying charges are: 30s. an hour for dual and solo training, 24s. an hour for "A" licence flying, and 20s. an hour if members purchase books of flight tickets equivalent to 20 hours flying. Among its members the Club have two "B" licensed pilots and one 2nd Class Navigator. The Club are holding their annual dinner and dance at Tilley's Varras Bridge Assembly Rooms on Friday, January 19. Tickets may be obtained from the Hon. Secretary, Cramlington Aerodrome.

BROOKLANDS

The Flying Club re-opened on Sunday, December 31, and was lucky in having a lovely day. During the rest of the week, however, the weather was not quite so good, and only 20 hours dual and 15 hours solo were recorded. Mr. Makley did a successful first solo. Mr. Addinsell joined the Club to obtain a "B" licence, and Mr. S. Horden passed all the technical examination for his "B" licence and is now busy doing his flying tests. Brooklands workshops are still working overtime mostly on C. of A. work. Mr. John Grierson has returned with his "Gipsy Moth," "Rouge et Noir," which is being touched up. The wood hangars on the south-west corner of the aerodrome, which were erected 21 years ago and saw service with famous pioneers such as Cody, Blériot, Graham-White and others, are being pulled down and new ones erected in their place.

IRISH AERO CLUB

The annual dance, held in the Gresham Hotel last week, proved to be the most successful the Club has ever organised. Three members of the Executive Council of the Free State attended, and it is hoped that Mr. Sean Lemass, the Minister of Industry and Commerce, and Mr. Sean McEntee, the Minister for Finance, had such a good time that they will look kindly on the Club when financial assistance is asked for this year. Colonel C. F. Russell, vice-president, in a brief speech, took an opportunity to appeal for the establishment of an Irish national air service. One of the attractions of the night was an aeronautical cabaret presented by Miss Eveline Birchall. The committee responsible for the organisation included: Mr. P. Gore-Grimes (chairman), Mr. T. O'B. Kelly, T. R. McDermott, Dr. G. E. Pepper, Dr. W. I. Chapman, Mr. T. McGonigal, Mr. E. F. MacSweeney, Mr. C. J. Crowe, Miss A. O'Neill, Miss Harpur, and Mrs. McGonigal.

JOHANNESBURG AERONAUTICAL ASSOCIATION

The hours flown during the fortnight ending December 17 amounted to 73 hr. 40 min. There were three cross-country flights made, one to Salisbury 700 miles away, and another on a "Leopard Moth." Mr. S. Pearce took his "B" licence and Mr. S. Curlewis did a first solo. The Christmas Party organised for children was a great success, over 150 being present. Father Christmas, Mr. S. People, of de Havilland's, found it necessary to obtain the services of a D.H. "Dragon" to transport himself and the presents. The weather during the second week in December was extremely cold, with low driving clouds and rain, which were responsible for the crash to a five-seater Junker of Union Airways, from which only one passenger escaped alive. The Club were invited to give a flying display at Adelaide, in the Cape Province, and two machines made the flight in appalling weather. The aerodrome of Messrs. Stewarts and Lloyds at Vereeniging, a town about 40 miles from the Rand, is completed, and possesses an up-to-date and well-equipped hangar.



Surplus in air votes

A NET surplus of £342,629 1s. 8d. in Air Force Votes for 1932 was shown in a Treasury minute issued last December, which authorised the temporary application

of surpluses on certain Air Votes for 1932 to meet deficits on other Air Votes for the same year. The deficiencies total £66,441 17s. 4d. and the surpluses amount to £409,070 19s.

AIRPORT NEWS

CROYDON

THE New Year was ushered in full gloomily for commercial flying, for so thick was the fog on the air routes that not one of the many services scheduled in and out of the Airport of London for January 1 was able to operate. One machine made the trip from Paris to Lympne only, and the pilot was very glad to be on the ground before the weather closed down on him. The D.L.H. night mail pilot made a gallant effort to begin the year well when he left Croydon at 11 p.m., an hour later than his scheduled departure time. He had to return, however, after a few minutes' flying.

An event of no small importance took place on January 3, when Mr. W. Rogers completed 20 years' flying service. He joined the R.F.C. on January 3, 1914, as a mechanic, and obtained his flying ticket in 1916. Only a week elapsed after his demobilisation before he joined Handley-Page Transport, Ltd. He has been crossing the Channel almost daily ever since and has 8,300 hours to his credit. Rogers, well known for his merry, untroubled outlook upon life, is physically in the pink of condition, and is remarkable for his youthful appearance. He is, in his proper person, the complete answer to the question which used to be asked fairly frequently: "Will the air line pilot be too old at 40?" Incidentally, Smirnoff, of the K.L.M., who recently completed two record flights—Amsterdam-Batavia and back—must be about 40. Again, the flying experience of Rogers might be briefly quoted to those Canadian and American critics

who recently queried in a newspaper whether the pilots of Europe, and of Imperial Airways in particular, were the most experienced air line pilots in the world.

Friday was the first day of 1934 on which all services ran to and from Croydon to schedule. Except for Cologne, the weather all over Europe was perfect. The weather-board in the main hall at this Airport showed blue, cloudless sky almost everywhere, in contrast to the bright yellow fog discs which had occupied it for the previous days.

By the irony of fate, Friday was the day of First Officer Loch's funeral at Golders Green, where representatives of Imperial Airways, Ltd., and foreign companies gathered to pay a last tribute to a victim of the fog. Capt. J. M. Gittins was buried on Monday, January 8, at Baudon Hill Cemetery, after a service at Croydon Old Parish Church. Every company operating to and from the Airport of London was represented both at the church and at the cemetery, and the number of wreaths and floral tributes was very large indeed. Again, strangely enough, Monday was a perfect flying day, with sun and blue sky.

There has been practically no flying by private owners at Croydon, owing to weather conditions, and Man Mohan Singh is still at Croydon waiting for better weather before setting out on his record-breaking attempt. I mention this because, if he is not heard of for a day or two, one of our newspapers may start another scare that he has left and is missing on the way.

A. VIATOR.

FROM HESTON

NEW YEAR speakers throughout the country proclaimed in chorus that business was once again on the upward grade, and expressed their confidence in a continued improvement in 1934. At the close of a record flying year, Airwork, Ltd., is able to swell the choir with no uncertain voice, for the Flying School in 1933 carried out (to add the strengthening decimal to a suspiciously round figure) 50.0795 per cent. more flying than in the previous year. 2,932 persons cleared Customs—an increase of 57 per cent. on 1932, and the opening of a new traffic hall for the accommodation of passengers will not be long delayed. The improvement in general trading has necessitated the erection of a new hangar, and 1934 will also see the extension of the aerodrome boundaries to include a further 38 acres, giving Heston a total landing area of 105 acres—an expansion of 56 per cent.

The Imperial Airways' *Hengist*, homeward bound with 30 passengers from Paris on December 31, circled Croydon in a vain attempt to penetrate the fog, and then proceeded to Heston (wireless messages urging it to hurry to race the advancing mist) and landed safely just before the fog closed in. A private owner, Mr. W. R. Westhead, whose machine is equipped with wireless, was approaching Heston at the same time. He received a message from Croydon warning him of the presence of *Hengist* in the neighbourhood, and wisely returned to Shoreham, his starting point, rather than risk a collision involving many lives.

Thrilling accounts are given by four pilots of Birkett Air Service, Messrs. Birkett, Digby, Stace and Glover, of a difficult job carried through successfully recently. On

December 30, at 3 p.m., four machines were requisitioned by telephone to fetch Press photographs of the air disaster in Belgium. Fog made the start impossible till the next day, when three "Puss Moths" and a "Gipsy Moth" took off from Heston at 8 a.m. and flew through very sticky weather to Ostend. Capt. Birkett had left Ostend on the return flight with pictures by 11.15 a.m. and got through without much difficulty. The other three pilots waited for further photographs, and made a start between 1.40 and 2.30, when the weather was already much worse. Mr. Stace got right through to Heston, where the floodlight was lit for his guidance, and landed successfully at 4.15. Maj. Digby and Mr. Glover landed at Lympne, having been forced gradually down to a height of less than 100 ft. above the Channel, swerving to avoid the masts of ships, and flying in dread of an unexpected meeting with the 400-ft. cliffs at Dover. Their troubles were, however, not over, and a further chapter to the air-versus-road safety controversy is added by the fact that the 'bus to which they transferred collided with a bank in the fog and was badly damaged on one side.

On Sunday, December 31, Mr. Brie, test pilot to the Cierva Autogiro Company, left Heston for Paris with a C.30.P. Autogiro (the latest of the new wingless direct-control models, of which the prototype was manufactured by Airwork at Heston), which was to be delivered to the French Navy. Details of the subsequent flight to Paris will be found elsewhere.

On January 4 a demonstration was given with a small 12-h.p. caterpillar tractor, marketed by the Bristol Tractor Co.



Newcastle Airport

NEWCASTLE CITY COUNCIL has received permission to borrow £21,000 to buy land which will be developed as a city airport.

Dewoitine Force Lands

THE Dewoitine monoplane *Emeraude*, which was attempting to bring mails back to Paris from Saigon in record time, force landed near Gwadar, on the coast of Baluchistan. The machine was forced down by lubrication trouble and the starboard undercarriage collapsed while landing on rough ground. The Dewoitine is fitted with three 575-h.p. Hispano-Suiza engines.

Will France abandon Speed record attempt?

THE French Air Minister, in order to encourage French constructors to make an attempt to regain for France the world's record for pure speed, offered a prize of half a million francs. The Bernard Company adapted a machine for the attempt, but various delays occurred, and towards the end of last year bad weather at Istres (Marseilles) prevented Doumerc from making the attempt, and as the Air Minister's offer expired on December 31, 1933, it is possible that the attempt may not be made. The Bernard monoplane is an extremely clean design, and with a Hispano engine of 1,600 h.p. should be able to beat the record easily.

NOW THAT IT IS ALL OVER

A short survey of the International Egyptian Aviation Meeting, of which we are this week able to publish the full official results

THE importance of the meeting can hardly be over emphasised, and we are glad indeed that we found it possible to see for ourselves the extent to which that importance has been realised by countries other than our own.

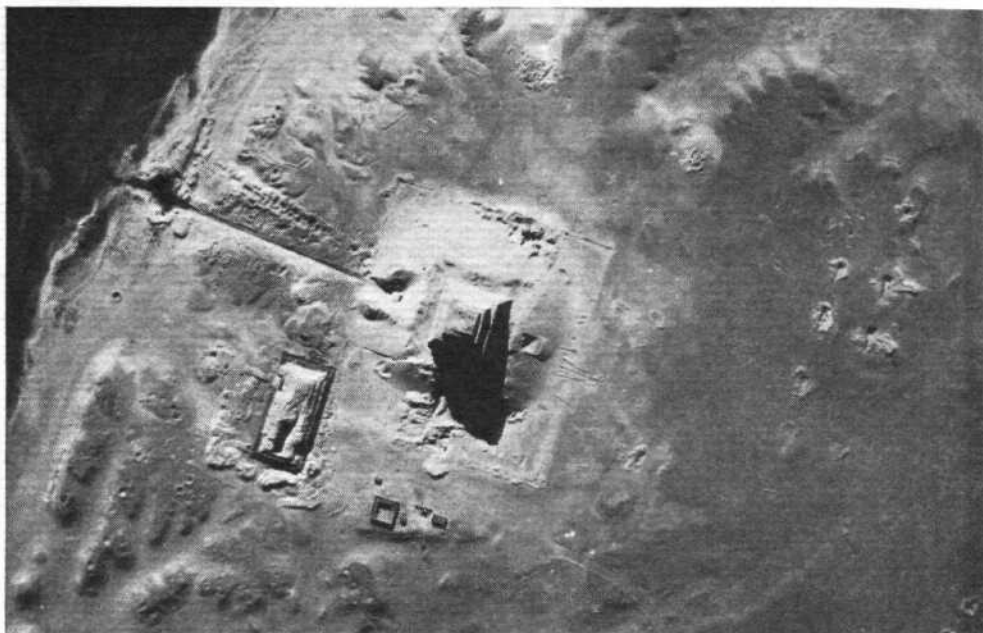
Egypt is destined to be the junction for all the most important air lines connecting the east to the west, air lines which will not only come from Europe, but also from beyond the Atlantic.

Egypt is the natural "cross-roads" of the air. The Egyptians themselves realise that and are now very wisely giving their Director-General of Aviation full backing with the schemes which he has inaugurated to establish Egypt in the world of the air. Sir Christopher Brand, who holds that post, is fully alive to the necessity of aerodromes, and aims at providing facilities for flying throughout the length and breadth of Egypt.

Reverting, however, to the meeting itself, a word of praise is due to the organisers and their volunteer staff.

Apart from the actual compilation of the rules and regulations governing the conduct of the meeting, and the award of marks upon which the results were based, there was a very great deal to be done, and the nature of the territory over which the Circuit of the Oases lay made the problems unique, so that the organisers had little or no previous experience upon which to work.

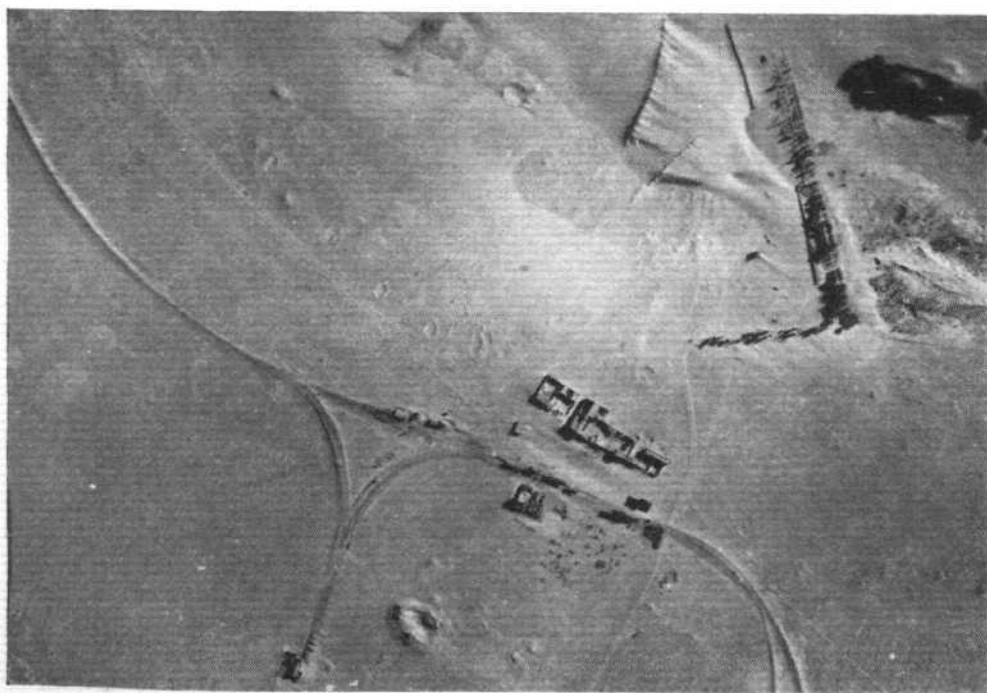
The surveying of the course, and the provision of maps was carried out by the Egyptian Army Air Force under command of Kaimakam V. Tait Bey. It must be remembered that much of the course lay over bare desert and led to oases which had seldom, if ever, been visited by Europeans. Certain it is that, in some cases, aircraft had never before landed there. The maps got out with the Egyptian Survey Department were magnificent. Never before have we seen a flying map produced about which



A ROYAL TOMB : Maidum Pyramid. A prominent landmark on the air route between Cairo and Asyut.

there was so little criticism. All unimportant detail had been left out, and everything of flying importance was clearly marked. In fact, we did not hear of a single competitor who had other than praise for this portion of the extensive assistance given him. The E.A.A.F. also patrolled the route, and, as we have already reported, were quick on the job when Mohamed Hassek Eff made a forced landing. His rescue is now ancient history. Incidentally, it was the start of a series of false reports, which appeared not only in the local papers in Egypt, but also back here in England. Inaccurate news was quite a feature of the meeting. This may perhaps, to a certain extent, be excused by the lack of facilities given people to obtain news, but does not entirely exonerate responsible people who, in some cases, appeared to publish everything they were told without verification. The forced landings of both Hassek Eff. and G. Robson were occasions for this sort of thing, as was the premature publication of the final results, despite the fact that the organisers had repeatedly pointed out that the results would not be available for some days, after the conclusion of the meeting. Printing false results was particularly to be regretted, as it raised the hopes of some pilots, who "mortgaged their expectations," only to find their hopes dashed later—we offer them our sympathy; it is far better to hold up results of competitions of this nature until they can be authenticated.

The aviation departments of the Shell Co., directed by Col. W. B. Beatty, and of the Socony-Vacuum Corp., in charge of Mr. Stanley Leigh, made themselves entirely responsible for the supply of fuel and oil. Mr. Barrington Mason, Col. Beatty's assistant, who flies the Shell Co.'s "Puss Moth," flew round the course on more than one occasion, we believe, and personally saw to it that the extensive organisation which had to be undertaken to get the quantities of fuel and oil out to the oasis aerodromes, was functioning satisfactorily. Every drop had to be carted to the aerodrome by camel or lorry, and at each point over 1,600 gall. of fuel



"ALL CHANGE" : Kharga railway station. These photographs and the aerials on the following pages were taken by Mr. Mason, of the Shell Company of Egypt, from the company's "Puss Moth."

AERO CLUB OF EGYPT—2nd

Racing Number	Name	Nationality	Aircraft and Engine	Time to Complete Circuit			Average Speed.	Marks for Speed on Formula	Fuel and Oil Load on Leaving Cairo		Fuel and Oil Consumed during Circuit		Persons in each Aeroplane	Fuel Consumption per Passenger Mile	Marks for Fuel Consumption on Formula	Range	Marks for Range
				H.	M.	S.			Fuel gall.	Oil litres	Fuel gall.	Oil litres					
1	1M. Lamur	Fr.	Caudron "Phalène" (Renault "Bengali")	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	2M. A. Caizergues ..	Fr.	Caudron "Phalène" (D.H. "Gipsy III")	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	5W. D. Campbell .. (Pilot, Flt. Lt. P. Pope)	Br.	Avro 626 (Lynx 4 C) ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	M. Bedel	Fr.	Caudron "Super Phalène" (Renault "Bengali")	9	35	52	97.43	880.6	51	14	83	19	3	0.0296	693.2	574.52	5
5	M. Laumet	Fr.	Caudron "Super Phalène" (D.H. "Gipsy Major")	9	28	30	98.68	892.0	48	14	76	14.5	3	0.0271	757.2	590.53	5
6	M. L. Durafour	Fr.	Caudron "Super Phalène" (Renault "Bengali")	9	27	32	98.85	893.5	48	14	79.5	20	3	0.0283	725.1	564.53	5
7	M. Alberge	Fr.	Caudron "Phalène" (D.H. "Gipsy III")	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	M. R. Bril	Fr.	Caudron "Phalène" (Renault "Bengali")	8	59	54	103.91	939.3	32	15	76	19	4	0.0203	1010.8	393.68	3
9	4Mme. Daubree .. (Pilot, M. Finat)	Fr.	Farman 199 (Lorraine "Algol")	7	23	40.5	126.44	1142.9	72	38	124	37	5	0.0265	774.3	542.90	5
10	5M. D. Robert	Fr.	Caudron "Phalène" (Hispano Suiza)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	M. Averous	Fr.	Caudron "Phalène" (Renault "Bengali")	9	43	06	96.21	869.7	44	14	76	15	3	0.0271	757.2	541.32	5
12	6M. Fremont	Fr.	Caudron "Phalène" (Renault "Bengali")	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	M. G. Hansez	Bl.	D.H. "Fox Moth" (D.H. "Gipsy Major")	9	00	38	103.77	938.0	35	09	59	08	3	0.0210	977.1	554.66	52
14	M. R. Mussard	Sw.	D.H. "Puss Moth" (D.H. "Gipsy III")	8	32	11	109.54	990.1	35.5	08.5	51.5	07.5	2	0.0275	746.2	644.51	60
15	7M. Maillet	Fr.	Potez 43 (D.H. "Gipsy Major")	9	56	11	94.10	850.6	46	14.5	74	16.5	2	0.0396	518.2	581.22	54
16	M. L. Challe	Fr.	Caudron "Phalène" (Renault "Bengali")	9	32	28	98.00	885.8	40	14	64	20	4	0.0171	1200.0	584.38	55
17	P. Randolph	Br.	Percival "Gull" (D.H. "Gipsy Major")	7	38	59	122.22	1104.8	40	13.5	44	03	2	0.0235	873.2	850.00	80
18	Herr K. Schwabe	Gr.	Klemm (Siemens 150) ..	8	00	01	116.88	1056.4	49.5	14	77	05	3	0.0275	746.2	601.07	56
19	8Mohamed Hassek Eff.	Eg.	Comper "Swift" (Pobjoy R)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	9Ahmed Salem	Eg.	D.H. "Puss Moth" (D.H. "Gipsy III")	8	39	28	107.99	976.2	34	08	46	02	2	0.0246	834.1	691.09	65
21	10Sig. A. Novelli	It.	Savoia Marchetti S 80 (Colombo)	7	40	00	121.95	1102.3	22	14	82	17	3	0.0292	702.7	250.85	23
22	Sig. E. Giuglielmotti ..	It.	Breda 39 (Colombo) ..	7	02	35	132.76	1200.0	32	20	66	31	2	0.0353	581.3	453.33	42
23	11S. B. Cliff	Br.	Miles "Hawk Special" (D.H. "Gipsy III")	8	09	38	114.57	1035.6	45	11	57	10	2	0.0305	672.8	738.16	69
24	Sqd.-Ldr. F. O. Soden ..	Br.	D.H. "Puss Moth" (D. H. "Gipsy III")	8	32	37	109.43	989.2	34	08	52	12	2	0.0278	738.1	611.35	57
25	12Mlle. Deutsch de la Meurthe (Pilot, M. Lasne)	Fr.	Farman 193 (Farman 200) ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26	M. J. Puget	Fr.	Farman 234 (Salmson 7 A C) ..	9	03	07	103.32	933.8	31	18	60	09	2	0.0321	639.2	483.08	45
27	S. D. A. Farman	Fr.	Farman 353 (D.H. "Gipsy III")	8	13	47	113.62	1027.1	32	18	62	04	2	0.0332	618.1	482.58	45
28	13Anisa Lotfia el-Nadi ..	Eg.	D.H. "Moth" (D.H. "Gipsy II")	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	W. Lindsay Everard .. (Pilot, W. D. Macpherson)	Br.	D.H. "Dragon" (2 D.H. "Gipsy Major")	8	32	22	109.50	989.4	86	20	105	07	6	0.0187	1097.3	765.81	721
30	14Aeroput Belgrade .. (Pilot, M. Strizevski)	Ju.	Spartan "Cruiser" (3 D.H. "Gipsy Major")	—	—	—	—	—	—	—	—	—	—	—	—	—	—
31	15G. Robson	Br.	Percival "Gull" (Napier "Javelin")	—	—	—	—	—	—	—	—	—	—	—	—	—	—
32	16Baron Hirschberg	Gr.	Fiesler 5 (Hirth R)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

1 Did not compete owing to entry being irregular.

2 Did not compete owing to illness of pilot.

3 Did not compete in Circuit of the Oases owing to illness of pilot.

4 Forced landed near the Barrage in Speed Race, short of petrol.

5 Did not compete owing to leak in petrol tank.

6 Damaged airscrew at Bahariya. Spare propeller flown out by E.A.A.F. machine.

7 Landed between Kharga and Dakhla to assist No. 31 who forced landed—retired from Speed Race. Disqualified owing to 53 kg. overloading.

8 Forced landed between Kharga and Dakhla—rescued by E.A.A.F.

10 Disqualified owing to range being 49 miles less than the minimum of 300 miles stipulated for safety.

11 Disqualified owing to 19 kg. overloading.

Winner of the Circuit of the Oases, Mr. W. Lindsay Everard.

alone were required. The questions of the various brands presented a pretty problem, and in the case of the fuel was solved by the Shell and Socony-Vacuum Companies, combining to supply a standard grade of mixture and to have a supply of benzole on hand. Competitors were not, therefore, guaranteed a certain make of fuel. Oil had to be narrowed down to a few well-known grades, but of a sufficiently wide range to suit any competitor. Apart from fuel and oil, all the amenities of life had to be carted out, not only for the officials at the aerodromes, but also for all the competitors and their passengers, who had to stay one night at Dakhla. Competitors, especially in an International Meeting, are very prone to grumble, but the organisation of that Dakhla night stop, though naturally rough and ready, left no one with an adequate excuse for anything except praise.

We have in our previous notes about the meeting, written while we were in Cairo, referred to the work of the Organising Committee, who in the face of very considerable difficulties, undoubtedly put up a very fine show. Sir Christopher Brand, the Director-General of Aviation, was the President, and under him was the Committee itself, consisting of:—Kamal Eloui Effendi; Alexandre Comanos Effendi; Kaimakam V. H. Tait Bey, Commandant of the E.A.A.F.; Miralai D. J. Wallace Bey, Director-General of the Frontier Force; Col. W. B. Beatty, Shell Co.; Mr. Stanley Leigh, Socony-Vacuum Corp.; M. Farthing, Administrator of the Telegraphs and Telephones; Mr. N. S. Castle, Inspector of Customs; and, last but not least, Mr. John Shand, on whose bowed but capable shoulders all the general organisation fell, and whose diplomacy proved equal to the task of coping with

INTERNATIONAL AVIATION MEETING

Safety Factor Test. Descent from 2,000 ft. with one engine stopped			Marks for Safety Factor Test on Formula			Wing Folding Test			Marks for Wing Folding on Formula			Marks for Factor C												Oases Trophy			Speed Rac Handicap	
M.	S.	600 $\frac{t}{12}$	M.	S.	100 $\frac{Q}{q}$	Carriage of Luggage	Comfort	Engine Starting	Safety Appliances	Controls, Instruments, etc.	Night Flying Equipment	Refuelling	Maintenance	Picketing	Take-off Test in Metres	Landing Test in Metres	Marks for Factor C on Formula	Total Marks on Formula	Placing for the Circuit	Marks for Speed on Formula	Total Marks	Placing	Speed	Placing				
						a	b	c	d	e	f	g	h	i	j	k	100 $\frac{C}{10}$			2,750 $\frac{v}{V}$			M.p.h.					
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
3	13.0	160.8	—	—	0	15	11.00	20	2.5	7.00	0	8	19.00	2.0	80.0	70.2	1,054.9	3,330	12	—	—	—	—	—				
3	17.4	164.5	—	—	0	18	13.00	0	5.5	6.75	0.5	8	17.50	1.0	75.0	94.7	891.7	3,261	14	—	—	—	—	—				
—	—	—	—	—	0	15	12.50	20	5.0	6.00	0	8	18.00	3.5	74.5	—	990.7	3,141	15	—	—	—	—	—				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
—	—	—	—	—	0	15	11.50	20	5.0	8.00	3	8	18.50	3.0	63.4	56.6	1,182.6	3,503	8	2,225.6	5,729	10	104.1	5				
3	08.2	156.8	—	—	0	20	13.00	15	5.0	6.50	2	8	14.00	2.5	95.0	138.1	1,001.1	3,586	6	—	—	—	—	—				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
3	40.8	184.0	—	—	0	10	13.00	20	1.5	4.75	0	8	17.50	2.0	87.5	51.9	1,006.3	3,327	13	2,225.8	5,553	9	104.1	4				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
3	33.6	178.0	—	—	0	12	14.25	0	2.5	7.50	9	8	18.50	9.5	60.0	67.7	1,060.8	3,676	4	2,446.3	6,122	8	114.4	2				
3	45.4	187.8	—	—	0	10	14.25	0	3.5	8.00	0	8	18.50	10.0	105.0	67.6	912.0	3,443	10	2,505.7	5,949	7	117.2	10				
3	17.6	164.6	1	45.4	37.8	5	13.50	0	5.0	5.50	0	8	17.75	4.0	55.0	50.0	887.5	3,006	D	—	—	—	—	—				
3	46.0	188.3	4	29.3	14.8	18	12.00	20	5.0	7.50	3	8	17.00	2.5	64.6	91.9	1,139.3	3,978	2	2,227.8	6,206	4	104.2	3				
3	17.0	164.1	—	—	0	7	14.00	0	2.5	6.00	0	8	18.25	7.0	162.0	—	678.4	3,621	5	—	—	—	—	—				
3	37.0	180.9	3	09.0	21.1	15	14.50	20	2.5	8.00	5	10	16.50	9.0	95.0	150.7	1,141.6	3,712	3	2,520.5	6,233	2	117.9	15				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
3	39.0	182.5	0	39.8	100.0	10	15.00	0	3.5	8.00	0	8	19.50	10.0	99.0	—	823.3	3,567	7	2,632.8	6,200	3	123.1	6				
2	14.2	111.9	—	—	0	20	10.50	20	8.25	5.25	7	10	19.50	7.5	135.0	107.0	1,211.2	3,364	D	2,669.6	6,034	—	124.8	—				
2	52.4	143.7	—	—	0	15	11.50	10	8.0	4.75	0	8	16.00	8.5	65.0	99.0	1,020.2	3,372	11	2,750.0	6,122	5	128.6	9				
3	47.0	189.2	3	42.0	17.9	18	12.75	0	3.5	4.50	2	8	18.50	3.0	—	77.3	799.5	3,410	D	2,510.3	5,920	—	117.4	16				
3	53.4	194.5	0	50.4	79.0	10	16.00	0	3.5	8.00	0	8	19.50	10.0	95.0	109.9	905.0	3,481	9	2,577.8	6,059	6	120.5	8				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
2	21.4	117.9	—	—	0	0	6.00	15	7.0	4.25	0	8	14.25	4.5	129.5	—	653.7	2,799	17	—	—	—	—	—				
2	57.0	147.5	—	—	0	15	8.00	0	4.5	5.25	0	8	18.00	2.0	77.0	84.5	803.4	3,050	16	—	—	—	—	—				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
—	00	600.0	1	22.7	48.1	14	17.00	20	3.25	6.50	9	8	18.00	8.5	93.0	100.3	1,206.0	4,662	1	2,607.8	7,270	1	121.9	12				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—				

12 Did not compete in Circuit of the Oases owing to illness of pilot.

13 Did not compete in Circuit of Oases. First home in Speed Race but disqualified owing to missing a turning point at Dekhela.

14 Did not compete.

15 Did not compete in Circuit of the Oases owing to late arrival.

16 Did not compete in Circuit of the Oases owing to late arrival.

* Winner of Kamal Eloul's prize for first Egyptian in the Speed Race.

* Winner of Heliopolis Oases Co.'s prize for Fastest Speed in the Speed Race.

NOTES.—Highest marks in each section of the formula are underlined.

Dragon" (2 "Gipsy Major"), pilot Mr. W. D. Macpherson

the flood of criticism and "moans" from competitors and others who felt that their own case was quite a special one and ought to be treated differently. However good the organisation of any meeting like this, there are always a few who want things changed to suit themselves. In order to cope with these people, an International Committee was formed from among those present, and this proved itself very well able to deal with all queries.

Of the English machines present at the meeting, only two were—so to speak—1934 models, these being Mr. Lindsay Everard's "Dragon" and Mr. S. B. Cliff's "Hawk Special."

The former is similar to the standard "Dragon" except that it has been cleaned up in certain details. The undercarriage is faired better than hitherto which, with the addition of a certain amount of other streamlining,

has resulted in an increased cruising speed. The two "Gipsy Major" engines are started by direct-acting Rotax electric starters working much in the same way as they do in motor-cars. The interior decoration of the "Dragon" is excellent, and Rumbold's have made it really comfortable. They have, of course, had scope to do so, as seats are provided for only five persons besides the pilot. These seats are of wicker work and, being upholstered, should, on the face of it, be very comfortable. The rest of the cabin decoration, wall covering and so on is in excellent taste and was consequently admired.

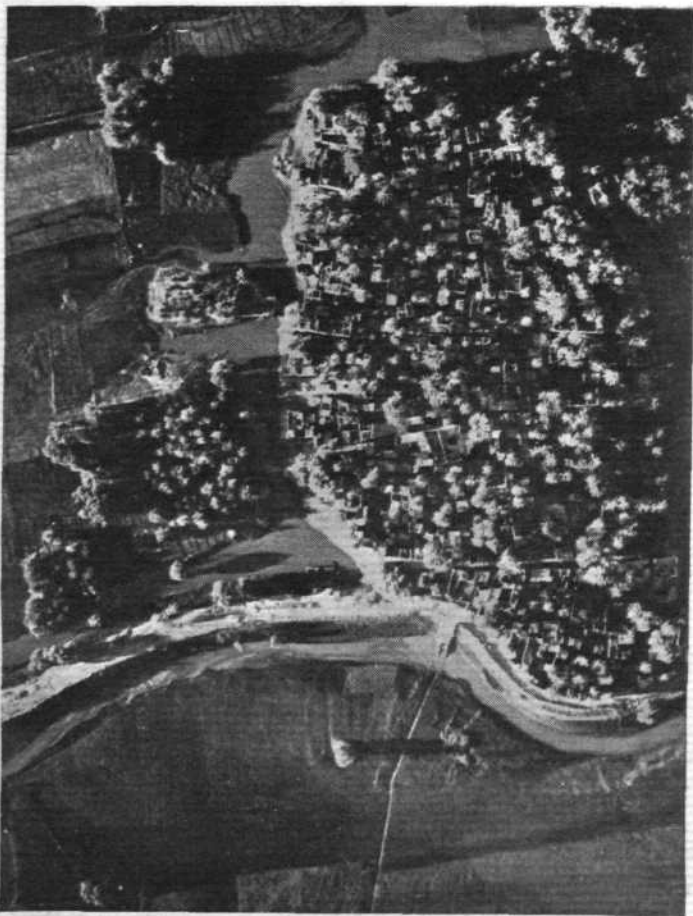
A good deal of criticism is said to have been levelled by some of the competitors at the regulations, on the score that they made it easy for a machine like the "Dragon" to win. This is really perfectly true, and the whole competition was framed with that very purpose in view. The

A HOME FOR JEFF? The village of Mut, in the Dakhla Oasis, situated about one mile from the landing ground, where the competitors spent a night.

"Dragon" has already, in the hands of Mistr Airwork, proved itself a type possessing safety and comfort of the kind most suitable for flying in countries like Egypt, but that fact did not preclude the possibility of any other country entering an aeroplane of similar specification which would have had an equal chance of winning. The assertion made in some quarters, that the rules were framed to allow a British machine to win, was, therefore, rather childish, because the rules had been known since July of last year.

The new type "Hawk" would have done a good deal better had it been fitted with wheel brakes and had it been possible to spend a little more time upon its preparation before it had to leave for Cairo. It was sporting of Mr. Cliff to take out such a new machine, and even more so to go to the expense of having a cylinder head especially flown to him near Benghazi, where he forced landed with a broken rocker-arm base. This was a costly business for him, but he has the satisfaction of having helped to swell the numbers of English entries, and also he would have been ninth in the Circuit had he not inadvertently overloaded his machine and thus been disqualified "on the post."

Of the French machines, there is little to be said. The Caudron "Phalène," with its Renault "Bengali" engine, is the French answer to the "Puss Moth" and the "Gipsy Major" engine. It does not look clean or very prepossessing, but in the hands of an expert like M. Leon Challe, the Stanavo representative for Algeria, gave a very



PEACE AND PALMS: A typical village in the Nile valley near Asyut.

good account of itself. Its sinking speed is evidently low, and its undercarriage strong; and many competitors gained marks by dropping it heavily in the landing test. Its take-off was impressive, and the machine evinced no desire to fall off on one side when prematurely "hoiked" into the air during the take-off test. All of the type were fitted with Viet engine starters, which on two occasions at least nearly caused serious accidents. People who walk about aerodromes have for so long been used to seeing a man swinging the airscrew when he wants to start the engine that they have become apt to walk very close to those airscrews when they do not see anyone by them. Now, in these days of self-starters and lack of forward view, it is quite possible for a pilot in a machine to overlook someone outside right under his nose and to injure them by starting his engine from inside the cockpit. One day we shall have pushers, or at least have the engines up or behind out of harm's way, but until we do so, people with nothing in particular to do should, when walking round aeroplanes, be taught to treat the airscrews like mad dogs or something equally liable to bite.

One of the most interesting machines, and also one of the most disappointing, was the Italian Savoia Marchetti amphibian (described in *FLIGHT* for December 21, 1933). The sacrifice in landing speed and pay load would hardly seem to justify the increase in top speed. With only two up its range was under 250 miles, and with that load it seemed to run for ever when taking off, despite the flapped wing, while the fuel consumption was the heaviest for its horse-power in the race.

A study of the tabulated results brings to light many interesting facts. In the Safety Factor Test, the "Dragon," with its two engines, naturally allowed Mr. W. Macpherson to gain full marks by staying up the full allotted 12 minutes. The Savoia Marchetti fairly "fell out of the sky," and only took a little over two minutes to come down from the 2,000 ft., while the Breda did very little better. Sqd. Ldr. Soden's "Puss Moth" took the longest time after the "Dragon," being only six seconds odd under four minutes, and another "Puss Moth," flown by M. Mussard from Switzerland, was only a few seconds shorter. The Caudrons varied considerably, due, one must suppose, to the standard of piloting, as all machines were allowed to be flown as light as their pilots liked.

The speeds round the course seem to indicate that not only must the competitors have had a good tail wind on both days, but also that several of the French, and both the Italian, competitors placed a little too much weight on the speed factor to the detriment of the marks they obtained for range and consumption. The cruising speed and consumption of both the "Puss Moths" were almost identical, and the economy of the "Gipsy" engine was an outstanding feature. Randolph's "Major" used only 5.8 gall./hr. If he had carried three passengers instead of only two, his consumption figure would have been 0.0157 gall./passenger-mile, and he would thus have gained top marks in this section. He would, of course, have lost something on range, actually about 400 marks,

PRIDE OF POSSESSION: Mr. Granger shows his friends how he travels to Almaza Aerodrome, Cairo, on the day of the Speed Race, a race in which he did not take part, as his 1906 Renault is reliable but hardly fast! (FLIGHT Photo.)



assuming that he was already loaded up to his full weight, and that is just about what he would have gained on consumption.

The English machines did, as was expected, best in the wing-folding test, and an Egyptian pilot, Ahmed Salem, managed this in 39.8 sec., a very creditable performance.

The Potez 43, with its fully and permanently slotted wing, took the shortest run both in taking off and landing, but he paid for his non-automatic slots by having to push his throttle open and the consumption of his "Gipsy Major" up to 7.4 gall./hr. Even then he only achieved a speed of 94.1 m.p.h., which made him the slowest machine in the Circuit. The Breda, on the other hand, must have gone nearly flat out in order to get the fastest speed of the Circuit at 132.76 m.p.h. His Colombo engine got through 9.4 gall./hr.

Finally, in view of the criticism levelled at the regulations governing the award of marks, it is worth noting that even if the "Dragon" had failed to gain anything at all for the Safety Factor Test, it would still have won with a fairly comfortable margin.

It now remains to be seen whether the organisers think that the results justify the repetition of a similar meeting next year. They have already signified their intention of

having a meeting of some nature, but whether that is to be another competition for large money prizes, or merely an invitation party to those who fly is not yet known. A party, with arranged sight-seeing tours and concessions in the way of visitors' expenses, would perhaps do more to advertise the beauties of Egypt, but there seems to be a feeling that sufficient entries would not be obtained if the money prizes were not in the scheme. Personally, we feel that the "party," with the organising money spent on defraying something of the expenses of the participants, would meet with universal favour. If we judge by the results of the *Week-End Aérienne* held in this country and the similar parties held in France, the response would be overwhelming. Anyhow the Egyptian meeting is now on the official F.A.I. calendar.



UP AND OVER: M. Leon Challe making a quick take-off in the tests. He finished second in the Circuit of the Oases, having carried four persons in his Caudron "Phalène." (FLIGHT Photo.)



"Ethyl" at the Royal Aeronautical Society

ON Thursday, January 18, 1934, Mr. F. R. Banks, O.B.E., F.R.Ae.S., will read an important paper on Ethyl, the use and advantages gained by the employment of Tetraethyl lead in fuels for aviation engines. This will be the most exhaustive paper on the subject of the use and advantages of tetraethyl lead which has yet been published. It will cover the choice of anti-knock materials for aviation fuels, the effects of tetraethyl lead in various fuels, engine development in relation to the use of leaded fuels, the effects of the products of combustion of a leaded fuel upon engine parts, engine operation with leaded fuels, engine tests, knock testing and assessing fuels in relation to engine performance, etc. The lecture, which will be very fully illustrated, will be delivered in the Lecture Hall of the Royal Society of Arts, 18, John Street, Adelphi, W.C.2, at 6.30 p.m.

Civil Aviation Section, London Chamber of Commerce

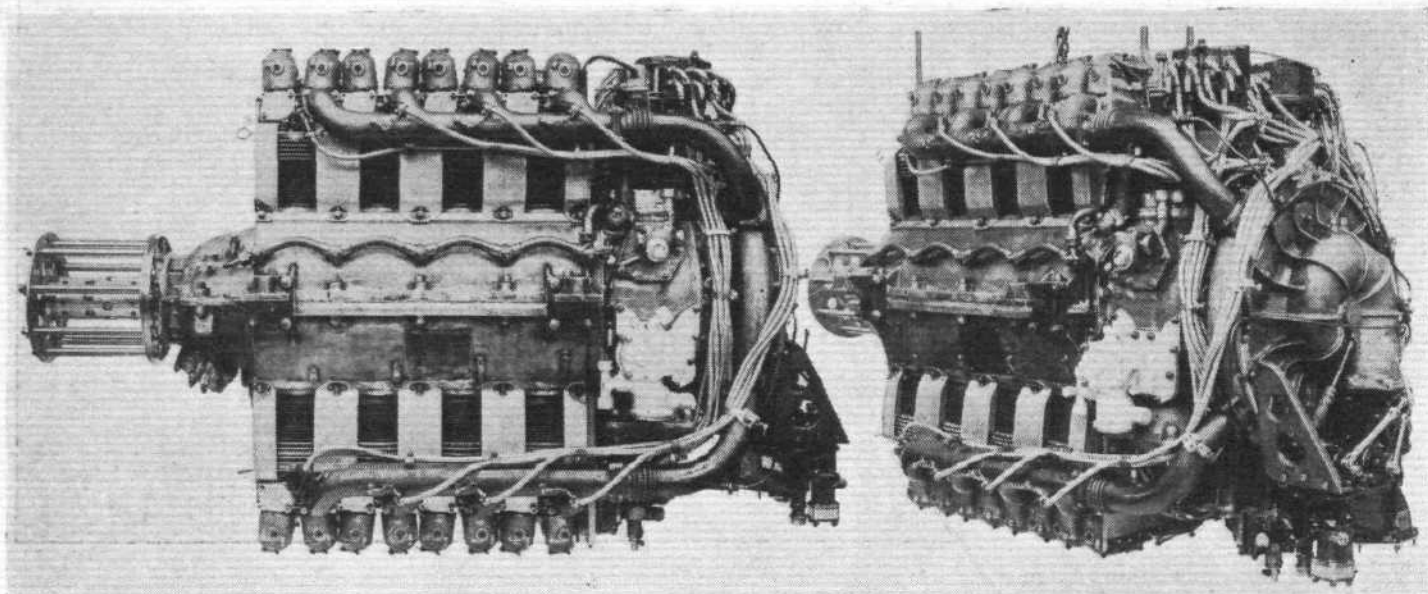
At the Annual Meeting of the Civil Aviation Section of the London Chamber of Commerce on January 4, Mr. H. Hemming was elected Chairman of the Section for the year 1934 in succession to Capt. P. D. Acland, whilst Mr. Ivor McClure and Mr. Nigel Norman were appointed Deputy Chairmen.

National Flying Services, Ltd.

THE period of management of the Receiver, Mr. C. J. G. Palmour, has been extended until March 8, 1934.

A D.H. Appointment

HIS many friends will be glad to learn that Mr. J. B. Holman has now joined de Havilland as personal assistant to Mr. Nixon. His headquarters will be at Hatfield.



COMPRESSED POWER : Side and three-quarter rear views of the Napier "Rapier." The Series II and Series IV are identical in external appearance.

THE NAPIER "RAPIER"

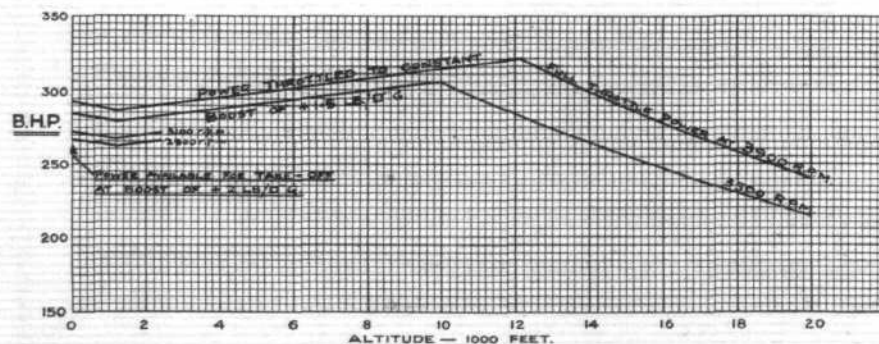
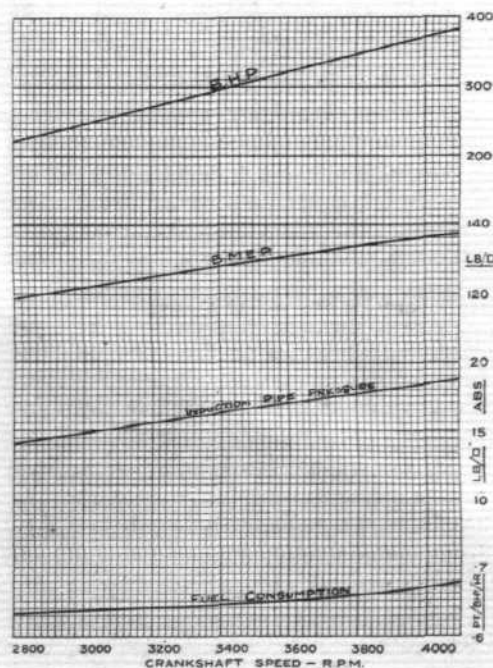
A description of the Series II and Series IV "Rapier" Engines, the latest developments of the type

JUST before the R.A.F. Display in 1930 the public was introduced to a new type of Napier engine, then known as the Halford-Napier "H." This engine, which had been designed by Major Halford, was installed in the D.H. 77 interceptor monoplane, which, considering the low power of its engine (something over 300 h.p.) had quite an amazing performance. The maximum speed was 203 m.p.h. at 20,000 ft. Since 1930, D. Napier & Son, Ltd., have further developed this engine (which was subsequently christened the "Rapier") into two models, known as the "Rapier" Series II and Series IV, which in external appearance are identical but which differ in the degree of supercharging used. The normal rating of the Series II engine is 305 b.h.p. at 3,500 r.p.m. at 10,000 ft. The power at maximum speed is 360 b.h.p. at 3,900 r.p.m. at 10,000 ft. The Series IV is a more powerful engine, delivering 325/340 b.h.p. at 3,500 r.p.m. and 370/385 b.h.p. at 3,900 r.p.m. (maximum speed). Both types have passed the Air Ministry 100 Hours Type Test.

The engines are air-cooled and have their cylinders

arranged in the form of an "H," with four banks of four cylinders each. The airscrew shaft is driven from two crankshafts geared together. It has been possible to keep the frontal area of the engines exceptionally small, in fact we are informed by the manufacturers that the frontal area is about 35 per cent. per h.p. of the orthodox air-cooled radial engine. The cooling problems raised in engines using air-cooled cylinders in-line have been successfully solved by the use of special baffle plates, which so direct the air stream that a safe cylinder temperature is maintained. Both bore and stroke are $3\frac{1}{2}$ in. in both types of engine; the reduction gear ratio of 1 to 2.5625 is also common to both. The following general description applies to both the Series II and Series IV engines.

The airscrew shaft rotates on two bearings in a clockwise direction when viewed from the airscrew end of the engine. A special journal roller type bearing is fitted at the rear end of the shaft, and a ball bearing to take the journal and thrust loads of the airscrew is fitted at the airscrew end. The reduction between airscrew and crankshaft is obtained through case-hardened steel spur gears. The



THE "RAPIER" SERIES II : Power available at altitude and for take-off. B.H.P. curves at international speed (3,500 r.p.m.) and maximum permissible speed (3,900 r.p.m.).

LEFT, THE "RAPIER" SERIES II : Rated Altitude Power Curve. Conditions of test : Engine running at full throttle at ground level with the pressure at the air intake maintained at the Standard International Barometric Pressure for the rated altitude of 10,000 ft.

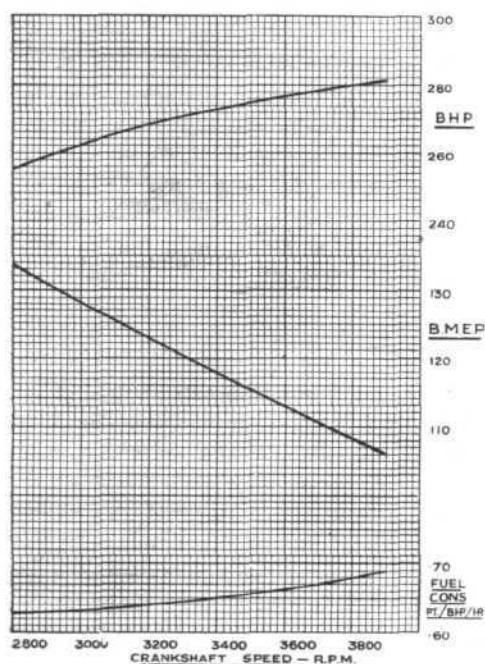
master rods are fitted in the upper cylinders on the port side and in the lower cylinders on the starboard side. The auxiliary rods are attached to lugs on the caps of the master rods. Separate steel bearing shells lined with lead-bronze are provided for the big ends. The gudgeon pin bearings and wrist pin bushes are of phosphor-bronze. Two crankshafts, machined from solid steel forgings, one for the two port blocks of cylinders and one for the starboard blocks, are fitted, each being carried in six plain bearings. All journal bearings and crank pins are hollow and are of large diameter.

The crankcase, which is in two halves, is of aluminium, with facings for bolting on engine support brackets for attachment to the aircraft. It encloses the reduction gear for the airscrew shaft, together with the shaft and bearings, two crankshafts, two camshafts with their respective

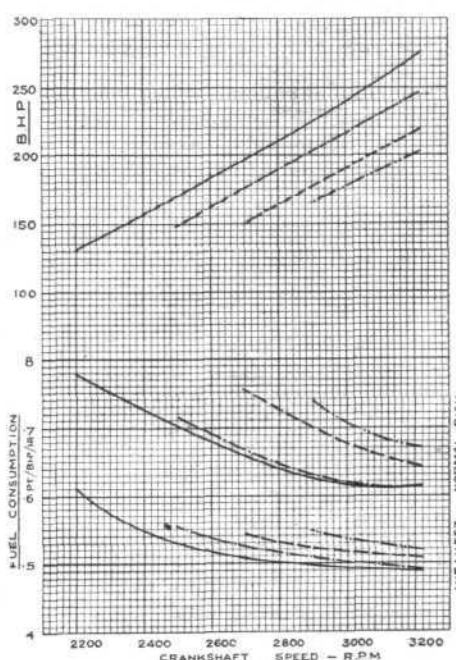
engine. Two filters for the scavenged oil are embodied in the oil sump, and filter the oil before it enters the scavenge pumps.

Two suction pumps and one pressure are fitted. The suction pumps scavenge the oil sump and return the oil to the supply tank, and the pressure pump takes the oil from the supply tank and delivers it to the working parts of the engine. A sump is attached to the inside of the timing gear case and contains the scavenge oil pumps, the pressure oil pump, and oil relief valves and filters for the scavenge pumps.

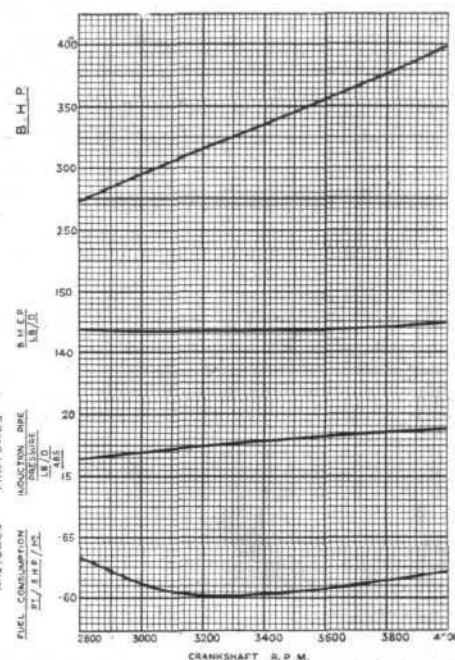
The pistons in the Series II engine are forged aluminium alloy and are each fitted with three gas rings, one scraper ring and a hollow gudgeon pin. The pistons for the Series IV are similar except for the fact that two scraper rings are provided.



THE "RAPIER" SERIES II:
B.H.P., B.M.E.P. and Fuel Con-
sumption Curves at Ground Level.



THE "RAPIER" SERIES II:
Throttling Power and Consumption
Curves.



THE "RAPIER" SERIES IV:
Full Throttle Power and Consumption
Curves at Sea Level.

bearings and the gun gear. The timing gear-case carries the camshaft driving gears and the necessary gears for magnetos, oil pumps, etc. The cylinders are machined steel forgings with screwed-on aluminium heads containing inlet and exhaust passages, valves and valve operating mechanism. One inlet and one exhaust valve per cylinder are provided, each being fitted with two coil springs and operated by rockers with push rods by the camshafts in the crankcase. The valve mechanism is totally enclosed.

A special Napier Claudel-Hobson carburettor is bolted directly to the rear of the supercharger, and the body, which is of aluminium, is oil jacketed near the choke. An altitude control cock is interconnected with the throttle control and arranged to give the necessary control under all conditions of supercharger boost.

Two special eight-cylinder two-point magnetos rotating anti-clockwise looking on the driving end are mounted at the rear of the engine with the armature spindle vertical. Special distributors are fitted to facilitate hand starting. Magneto controls are interconnected, and the ignition cables are metal braided.

A petrol pump of the gear-wheel type is fitted to the rear end cover, and a packing gland is provided on the driving shaft to prevent petrol leakage. Incorporated in the petrol pump is a relief valve, which is controlled by a light phosphor-bronze spring adjusted so that the petrol supply to the carburettor is adequate under all conditions. Lubrication is by pressure throughout, to big ends, crankshaft journals, gudgeon pins and camshaft bearings. The reduction gears are lubricated by oil projected on to the teeth from a jet connected to the high pressure system. Oil is by-passed through a relief valve to the low pressure system, by which the rest of the engine is lubricated. Escaping oil from the various bearings, etc., is drained into the lower half of the crankcase and oil sump and is delivered to the supply tank by suction pumps. Adjustable pressure relief valves are incorporated for both high and low pressure oil supplies. One Tecalemit filter is supplied for fitting between the pressure pump and the

The supercharger is of the centrifugal fan type and is fitted at the rear end of the engine. It functions between the carburettor and the induction manifolds. The impeller is driven from an extension of the airscrew shaft through lay shafts by means of special spur gears. Friction disc clutches are incorporated in the lay shafts.

A Napier petrol starter is provided which pumps the fuel into the cylinders, where it is ignited by a hand starting magneto operated through the distributors of the engine magnetos. A gas distributor is fitted to provide an alternative method of starting by an auxiliary engine and gas compressor. Hand-turning gear is provided with an 8.28 to 1 reduction between the starting handle shaft and crankshaft. A throw-out gear is incorporated to prevent damage by back-firing.

The dimensions of both engines are the same, i.e., overall length, 4 ft. 7½ in.; overall width, 1 ft. 8½ in., and overall height, 2 ft. 11½ in. The net dry weight of the Series II engine, without airscrew hub, petrol pump, or gun gear, is 710 lb. The Series IV engine weighs 16 lb. more. In both engines the airscrew hub weighs 14 lb., the petrol pump 3½ lb., and the gun gear 2½ lb. The weight per h.p. on rated power for the Series II engine is 2.33 lb. per b.h.p., and on the average power at maximum speed 1.97 lb. per b.h.p. The corresponding figures for the Series IV engine are 2.14 lb. per b.h.p. and 1.89 lb. per b.h.p.

The oil consumption of the Series II, taken on the Air Ministry Type Tests, must lie between 6 pints per hour and 12 pints per hour. The average oil consumption is .0396 lb. per b.h.p./hr. on rated h.p. For the Series IV engine the maximum oil consumption is 12 pints per hour, and the minimum, 8 pints per hour. The average figures obtained during Air Ministry Type Tests were 9½ pints per hour, or .033 lb. per b.h.p./hr.

The fuel consumption of the Series II engine is equivalent to .616 lb. per b.h.p./hr., with fuel of a specific gravity of .775. With the fuel of the same specific gravity, the Series IV engine consumes .604 lb. per b.h.p./hr.

AIRISMS FROM THE FOUR WINDS

Lord Londonderry's air tour

LORD LONDONDERRY, the Secretary of State of Air, arrived in Baghdad on Monday, January 1. On the following day he left by Imperial Airways for India and arrived at New Delhi. On Sunday, January 7, he flew on to Calcutta, where he remained as the guest of the Viceroy until January 10. Discussing the journey by air, Lord Londonderry is reported to have said that the whole journey to India might be speeded up by the elimination of the train journey between Paris and Brindisi.

Colonial Secretary's air tour

SIR PHILIP CUNLIFFE-LISTER, the Secretary of State for the Colonies, is making a six weeks' air tour of East Africa. He left England on Wednesday, January 3, and travelled overland to Brindisi, whence he flew to Egypt. During his tour Sir Philip will visit Egypt, the Sudan, Uganda, Kampala, Nairobi, North Tanganyika, Lake Victoria and Kisumu.

Stranded Arctic explorers

LAST week FLIGHT mentioned the stranding of the Russian icebreaker *Cheliushin*, which was on an exploration expedition in the Arctic under Prof. Schmidt. It was also mentioned that aeroplanes might be sent out to effect a rescue. It now transpires that the rescue plans will have to be abandoned until the end of the winter. Two specially prepared machines will, however, spend the winter at Providence Bay ready to set out on an attempt at rescue at a moment's notice.

Antarctic expeditions

It is reported that Capt. Ernest Miles Joyce, the Polar explorer who accompanied the Scott and Shackleton expeditions, is organising an air expedition to the Antarctic.



THREE LITTLE PIGS: All who have seen Walt Disney's "Silly Symphony" will appreciate this cartoon by "Poy," reproduced by kind permission of the Editor of the *London Evening News*.

The object of this expedition, which may leave in August, is to investigate the commercial possibilities of the land discovered by Scott, Ross and Shackleton. The expedition will have three aeroplanes. Meanwhile Admiral Byrd has discovered two hundred thousand square miles of sea which, up to the present, have been chartered on maps as land. No doubt Admiral Byrd is also considering the commercial possibilities of this new and remarkable discovery.

Yet more air rescues

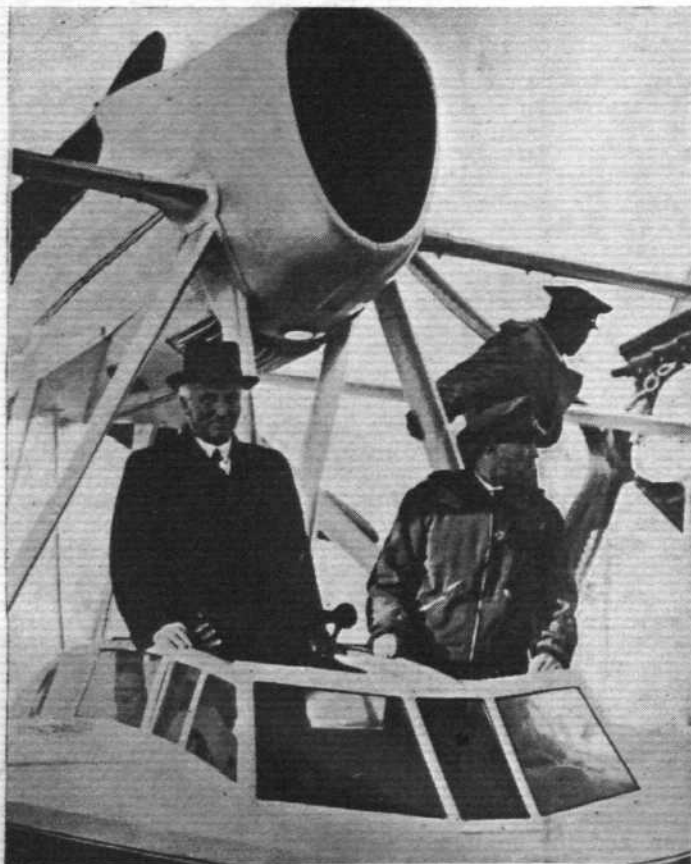
ONE hundred motorists are reported to have been marooned along the main road near Kroonstad, in the Orange Free State, by reason of heavy floods. Food has been dropped to them by aeroplanes.

Those pylons again

FOLLOWING on the heels of the *Apollo* disaster, we have to record more crashes also due to the pylon menace. Last Friday, Miss Evelyn Frost, an American, and Mr. Geoffrey Benskin Ruddle, both members of the Reading Aero Club, left Orly for an aerial tour of Southern France in a "Moth" belonging to Miss Frost. While flying near Nevers, Mr. Ruddle, who was flying the machine, lost his bearings while searching for an aerodrome, and, in trying to make a landing in a field, hit an electric cable and crashed on a road. The aircraft caught fire and Miss Frost was burned to death. Mr. Ruddle was thrown clear, but was badly burned in looking for Miss Frost in the flames. He was taken to hospital in Nevers. Another disaster occurred at the Civil Aviation School at Brunswick, Germany, when a pilot and mechanic were killed in a collision between the training machine in which they were flying and the mast of a wireless station. Both occupants were burned to death.

Another speed record for France

LAST week we recorded that M. Delmotte, piloting a Caudron C.362 monoplane fitted with Renault "Bengali Special" engine, had established records for light planes over 500 and 100 km., at Istres, Marseilles. Now the world's speed record for unlimited engine size and aeroplane weight appears also to have gone to France, the pilot, Massotte, being reported to have covered a distance of 1,000 km. (621.4 miles) at an average speed of 225 m.p.h. This figure must be accepted for the present with a certain amount of reserve, pending official confirmation, but, if correct, it means that the previous record over 1,000 km., held by the German pilot, Untucht, on a Heinkel, with B.M.W. 630-h.p. engine, has been beaten by approximately 10 m.p.h. by a machine having an engine of only about 200 h.p. The Caudron monoplane flown by Massotte was similar to that used by Delmotte, but the engine was a Règnier six-cylinder in-line air-cooled. M.



SIR JOHN SIMON IN ROME: The Foreign Secretary flew from Capri to Ostia in an Italian seaplane on January 3. On his arrival at Rome (shown above) he spent two hours with Signor Mussolini.



SPEED FOR INDIA: The "Cheetah"-engined "Courier" of R. Dundas, Ltd., on the tarmac at Almaza Aerodrome, Cairo. Lord Ronaldshay, Managing Director of the Company, is flying to India in this machine, piloted by Mr. C. E. Kelly. (FLIGHT Photo.)

Règnier is the French concessionaire for de Havilland engines, and the six-cylinder Règnier is virtually a "Gipsy III" with two cylinders added. Untucht's record stood at 347.477 km./h. (215.9 m.p.h.).

French flying-boat across the Atlantic

THE French Latecoere flying-boat, *Croix du Sud*, which, as reported in FLIGHT last week, flew from France to St. Louis, Senegal, left Senegal on Wednesday, January 3, and arrived at Natal the next day after a non-stop flight across the Atlantic. The *Croix du Sud* has been designed and built for regular mail service across the Atlantic. It was piloted by Capt. Bonnot and Lt. Jean Pierre, and is powered by four 650-h.p. Hispano-Suiza engines.

New autogiro for France

THE French Government have ordered a direct-control Autogiro which was delivered on Friday, January 5. It was flown across to France by Mr. R. A. C. Brie, who took 2 hr. 20 min. to fly the 225 miles from Heston to Paris. That represents a cruising speed of about 96 m.p.h.

Machine for Emperor of Ethiopia

RAS TAFARI, the Emperor of Ethiopia, has brought a secondhand machine for his own personal use.

Civil Cross for Ruysselede crash rescuer

HIS MAJESTY THE KING OF THE BELGIANS has awarded a Civil Cross to Camille van Hove, one of the rescuers of the Ruysselede crash. M. van Hove is a farmer who was endeavouring to drag clear one of the victims when the wreckage of the machine burst into flames. He was severely injured, and has been lying in hospital ever since.

The latest Nieuport Machines

A good performance is expected of the new Nieuport "tailless" machine when it makes its first flights shortly. The Nieuport 690, it is thought, will not be put into production, as, for its power (300 h.p.) it is considered rather heavy.

Well-merited recognition

News has just been received that the American Society of Automotive Engineers has awarded the Manly Memorial Medal to Mr. A. H. R. Fedden, Chief Engineer of the Engine Department of the Bristol Aeroplane Co., Ltd., for his development work on air-cooled aero engines. Readers of FLIGHT will derive a great deal of satisfaction from the fact that this coveted American distinction has been bestowed upon a British designer. The award follows the reading of a very important paper by Mr. Fedden to the International Automotive Engineers' Congress in Chicago in September last, and is a very fitting recognition of the work which Mr. Fedden has done in developing the radial air-cooled aero engine. On behalf of ourselves and our readers, we extend to Mr. Fedden our very hearty congratulations. In another form this work has already been recognised by no less than 16 different countries, which are building Bristol aero engines under licence.

Not "Javelin" and not "Genet Major"

AMONG the illustrations to Mr. Fedden's very interesting paper on air-cooled engines, which the Bristol

Aeroplane Co., Ltd., were kind enough to lend us for publication in FLIGHT, those published in our issue of December 28 last, on p. 1315, were wrong in two respects. The engine on the left was not, of course, a Napier "Javelin," which is an inverted six-cylinder engine, and the radial engine in the centre was not, as stated in the caption, an Armstrong-Siddeley "Genet Major," but a Salmson A.D.9. Will readers who wish to have their copies of FLIGHT accurate please make the necessary corrections.



THE HISTORY MAKERS: Orville Wright, who thirty years ago made the first aeroplane flight at Kitty Hawk, N.C., and Mrs. Amelia Earhart Putnam, the first woman to make a West to East solo flight across the Atlantic, are shown here at the new Franklin Memorial Institute, Philadelphia, standing beneath the 'plane in which Miss Earhart crossed the Atlantic, while beside Wright is the motor of the 'plane in which he made his memorable flight.



NEW BLACKBURN "SEGRAVE"

THE first machine of this type was built by Saunders-Roe, of Cowes, and was known as the Segrave "Meteor." Afterwards the Blackburn Company took over the construction, which was "translated" into all-metal. Lately the machine has appeared in yet another form, with a single-spar wing designed by Mr. F. Duncanson, who will be familiar to our readers from his articles in *THE AIRCRAFT ENGINEER* (Monthly Technical Supplement to *FLIGHT*), and who has now joined the Blackburn Company.

Mr. Duncanson has produced a most ingenious wing, which looks extremely robust, having very few parts indeed, and which gives great promise for the future. It may be remembered that Mr. Duncanson has contributed articles on cantilever wings, and that he has had a good word to say for the single-spar wing. In the "Segrave" this has been realised by making the spar a circular-section tube of

Duralumin. Internally this tube is supported by ring formers or diaphragms, while externally it is stiffened by corrugations at top and bottom. The metal ribs are very neatly and simply attached, and the whole wing structure looks remarkably simple and commonsense, and will appeal, apart from its good strength/weight ratio, on account of the simplicity of manufacture.

One of the advantages of a solid-walled tubular spar of this type is that it can readily be made watertight, or rather petroltight, and in the "Segrave" a portion of the spar is used as a petrol tank, saving all the trouble and weight of separate tanks which have to be supported somehow.

The Blackburn Company is to be congratulated on having realised the advantages of the Duncanson type of wing construction, and we look forward to some interesting developments at Brough. Our photographer was able on a recent visit to get the accompanying photographs of the "Segrave." Later we hope to publish a detailed description of the Duncanson single-spar wing, and to explain its main features.



ARMSTRONG-SIDDELEY AND ARMSTRONG-WHITWORTH

Developments during 1933

OWING to their proved dependability in service and ease of maintenance, 7-cylinder Siddeley engines of various sizes have been ordered in increasing numbers during the past year for powering the latest types of training aircraft. The 140-h.p. "Genet Major," 215-h.p. "Lynx" and 260-h.p. "Cheetah" have all taken a prominent part in this branch of aviation.

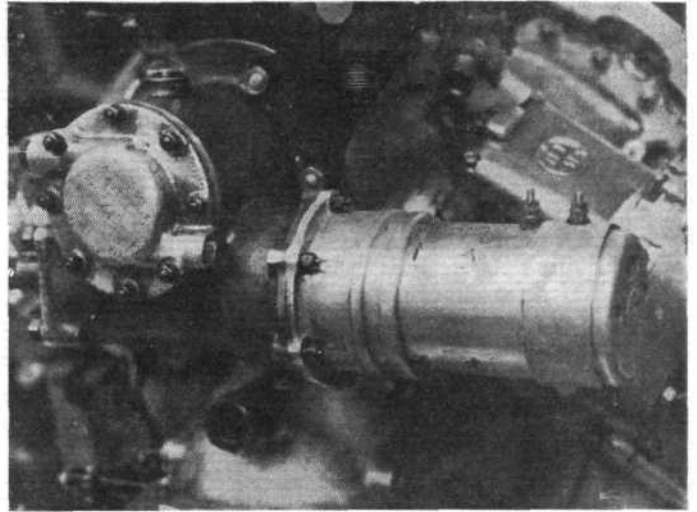
The 7-cylinder "Genet Major" has been improved by the fitting of a hand-electric starter and self-regulating diaphragm petrol pumps, while other detail alterations in design have increased its period between overhauls to well over 500 hours.

The hand-electric starter is used in conjunction with an ignition coil and W/T battery of 50 amp.-hr. capacity. There is also provision for starting the engine by hand or plugging in an external service battery. This arrangement supersedes the old type exterior starting gear by a single internal clutch, the dog being fed automatically into engagement and a standard form of ratchet and worm gear being employed. An independent generator drive can be taken through the starter and mounted on its face. This hand-electric starter is also available on the Siddeley "Tiger," "Panther," "Jaguar," "Cheetah" and "Lynx" engines, and is adaptable to other units of the range.

The self-regulating diaphragm petrol pumps have the advantage of being both light and simple. The design substitutes for the relief valve that was necessary with the gear type of pump, a pump plunger with a compressible member, which ensures that the pressure on the delivery side is constant and suitable for all carburetter requirements. The new self-regulating petrol pumps are available on the Siddeley "Leopard," "Tiger," "Panther," "Jaguar," "Cheetah," "Lynx," "Serval" and "Genet Major" engines.

The 215-h.p. 7-cylinder "Lynx" engine incorporating the above improvements still maintains its position in the world of aviation, another proof of the esteem in which it is held being shown by its being chosen for powering the new Airspeed "Courier."

The 7-cylinder Siddeley "Cheetah" (which used to be known as the "Lynx Major") is now available in two types, the IIA rated at 260 h.p. at 2,000 r.p.m. at 2,500 ft. and the V which is rated at 270 h.p. at 2,100 r.p.m. at

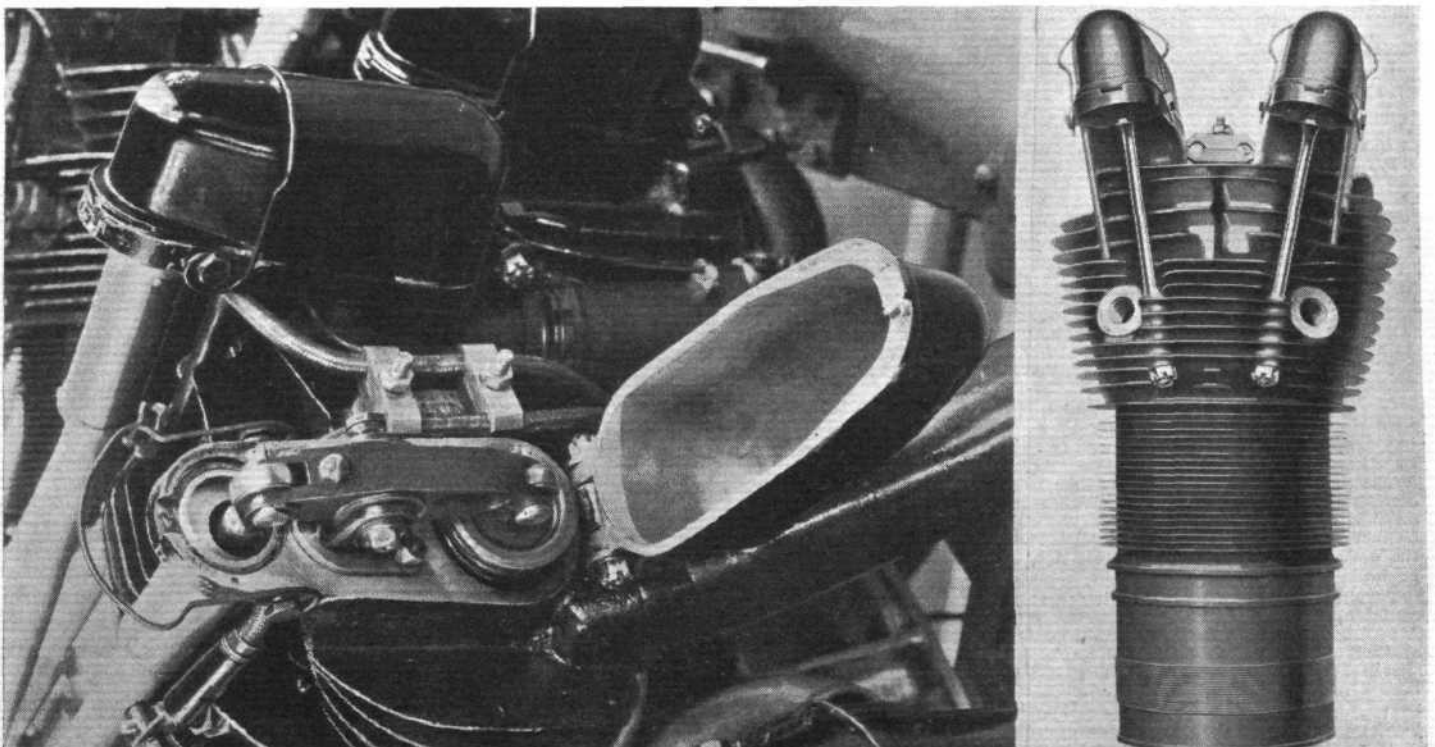


The Siddeley hand-electric starter.

sea level. The former has been brought up to the "Panther VI" specification and incorporates the latest valve gear, oil pumps and system, timing gear and accessories. The latter is a direct-drive high-speed version of the IIA and is fitted with a paddle fan. It embodies a steel engine bearer of the "Lynx" type, new-type high-speed cylinders, all-enclosed valve gear and an improved method of accommodating the fairing ring.

The 10-cylinder "Serval"—As a result of experience with the Atalanta class of aircraft, various modifications have been carried out on the "Serval III" engine, with the result that the take off with these engines has been considerably improved. The "Serval IV" is an ungeared version of the "Serval I." It is produced at the same rating of 340 h.p. and represents a considerable saving in weight. The series I type has been adopted by the Air Force as the power unit for flying-boats.

The 14-cylinder "Panther VI" embodies the same new high-speed cylinders and improved valve gear as are used on the "Cheetah." The improvements incorporate better



THE ARMSTRONG-SIDDELEY "TIGER": On the left is the cylinder head, showing the improved rocker arms with roller-bearing ends. On the right is the latest type of cylinder, showing improved finning and rocker covers.

finning for the cylinder and a lighter and more frictionless type of rocker gear as well as improved porting. The fan speed has been increased and gives a higher rated altitude, while the take off has been improved owing to an increase in the maximum permissible boost from 0 to $+1\frac{1}{2}$ lb. Comparison of the old with the new types is worth giving:—Old Type: 535 h.p. at 3,000 ft. at 2,000 r.p.m. normal. New Type: 560 h.p. at 5,500 ft. at 2,100 r.p.m. normal.

The 14-cylinder "Panther VII" is a supercharged version of the VI and is rated at 540 h.p. at 12,000 ft.

The 14-cylinder "Tiger" is a larger version of the "Panther" and has been the subject of continual development during the past season. Encouraging results have been obtained, and, while the rating at the moment is 640 h.p., it is expected to be considerably increased during the near future.

At the Whitley Works of Sir W. G. Armstrong-Whitworth Aircraft Co., Ltd., various types of the company's A.W.XVI (a single-seater with a top speed in the neighbourhood of 200 m.p.h.) have been continually developed.

One type has been produced as a fleet fighter and as a day and night fighter. In both cases the aircraft is notable for its exceptionally good control, especially at low speed, and for the excellence of its detail work.

In addition to experimental work on new types of aircraft of advanced design, the factory has been busily employed on Air Ministry contracts, not only for complete machines, but also for spare parts.

An interesting side line has been the successful development of stainless-steel floats, of which the company claims to be the pioneer. These floats are claimed to have a much longer life than those made of other metal and to give the same buoyancy for approximately the same weight. Important work has also been undertaken in connection with metal propellers, which are not only independent of climatic changes, but also proof against wear and tear caused by flying stones, rain or hail.

Work in the wind tunnel has proceeded continuously, and a great deal of valuable information in regard to the design of cowling and fuselage has been collected and will be, later on, incorporated in new designs of aircraft.

THE INDUSTRY

FAIREY AVIATION CO. ANNUAL REPORT

THE Fifth Ordinary General Meeting of the Fairey Aviation Co. was held at Winchester House, Old Broad Street, London, E.C., on Friday, December 29.

Mr. C. R. Fairey, M.B.E., F.R.Ae.S., the chairman and managing director, presided. In his speech, he said that it was with deep regret that he had to record the death on December 3 of Mr. A. G. Hazell, the secretary of the company and a member of the board since its incorporation. Mr. Hazell had been associated with the company and its predecessors for nearly 18 years, and was one of the small band who had helped to build it up from the beginning. His death would be a very severe loss to all. The result of the year's working, ended September 30, 1933, showed a profit of £116,682 14s. 7d., a fall of £81,827 3s. from that of the company's peak year, 1932, but in view of the difficulties encountered during the year this result was regarded as satisfactory. The directors recommended a dividend of 10 per cent., less tax, and the carrying forward of the balance. The cause of the drop in profits, the chairman continued, was the shrinkage in the turnover of business done with the Air Ministry. The export trade had again increased and reached the highest figure the company had yet attained. The reduction in business with the Air Ministry was due chiefly to the fact that there had been less re-equipment this year of squadrons using the company's types of machines, and to a change in the official policy, also no production orders had been obtained for the new types available. Mr. Fairey then turned to the foreign business of the company. The subsidiary company, Avions Fairey de Gosselies, had been on full production throughout the year and had good orders in hand. The best successes abroad had been in Belgium and South America. During the year two new models of the types supplied to the Belgian Army had been produced and would shortly be submitted for test. To meet the requirements of that country the establishment of the company was being extended.

The business in the manufacture of all-metal propellers continued to be good, but exports trade in this particular was limited by the conditions of the company's licence.

The long-distance record, won by Squadron Leader Gayford and Flight Lieutenant Nicholletts, was flown on a Fairey machine with a Napier engine.

Turning to the detailed items in the accounts, the principal change is in the absence of the debenture stock and the corresponding effect on the cash in hand. The entire balance of the debenture stock, amounting to £220,300, was redeemed on June 1 last at 110 per cent., in accordance with the provisions of the trust deed securing such stock, by the company exercising its power to give three months' notice to the trustees to redeem. The reduced turnover for the year was reflected in the fall in the amounts for work in progress and stock, and the latter item is further reduced by the drastic writing off of old stocks. The fall in the item of investments is due to the redemption of certain securities. The remaining investments had a market value of £16,475 14s., about £1,800 in excess of book value. The item for amounts due from subsidiary companies was high at the time of making up the accounts, but of this £40,000 has since been paid. Proper depreciations had been made and the directors considered that the balance-sheet showed a sound financial position.

Mr. Fairey mentioned that the results from the Air Survey Company had proved disappointing, consequently the company's establishment had been cut down to the very minimum, and Mr. R. C. Kemp had left for India to report on conditions there.

The experimental side was very busy with the design and production of certain new types for next year's programme. The company were also engaged on another important activity with a view to strengthening their business, with the approval and knowledge of the Air Ministry. Owing to the provisions of the Official Secrets Act, no disclosure of any kind could be made concerning this.

Turning to the future, the chairman said that it was never possible to contemplate very far ahead what orders might come in, but very important Air Ministry competitions to be held next spring and summer would have an important bearing on the company's prospects. No efforts were being spared by the company in preparation for this competition. There had been a marked slowing up of recent years in the time taken to introduce new types into the Royal Air Force, largely due to the elaboration of the procedure in fostering of experimental designs and the length of time taken in the trials. During all this time the companies concerned are investing money in the prototype, and at the end of the time the machine may not go into production, even after successfully completing its trials, owing to a change in policy by the authorities. If this country is to keep its place in military aviation and its present technical ascendancy, the time had come,

emphasised Mr. Fairey, when steps should be taken to speed up the entire procedure, which he understood was actually under consideration.

Mr. Fairey, commenting on the Air Force, then said that although there had been a certain amount of talk of the necessity of increasing the British Air Force no active steps had yet been taken, and such as are mentioned appeared to be entirely inadequate. Whatever the future policy might be there seemed little justification for maintaining the Royal Air Force at its present size, since it was altogether too small to cope with the air forces of any first-class power, and had no adequate reserve of machines to bridge the gap between the outbreak of a national emergency and the time when the industry could adjust its output to the vastly greater demand that would then ensue.

The relations of the company with the Air Ministry continued to be excellent, and in view of the prompt and reliable service which the company had always given the Ministry the Chairman thought they were justified in assuming that they would continue to receive official support.

DE HAVILLAND AIRCRAFT CO.

THE Annual General Meeting of the de Havilland Aircraft Co., Ltd., was held at the Stag Lane Aerodrome on Saturday, December 30. The following is a *résumé* of the Chairman's report:—

Mr. A. S. Butler, the chairman, in referring to the balance sheet pointed out that the note stating that a contract had been entered into for the sale of the greater part of Stag Lane Aerodrome for approximately £105,000 was only a statement of fact. No part of the transaction had come into the past year's accounts. The company were left with 14 acres on which the works stood and roads immediately surrounding them. It should be understood that the cost of the new factory at Hatfield could not be met from the proceeds of the sale of Stag Lane only. Whether the difference could be bridged over by the sale of the factory was a matter on which it was not possible to give an opinion. The Directors, however, did not anticipate any shortage of working capital. Mr. Butler also mentioned £24,133 which had been used to purchase land adjoining Hatfield Aerodrome, and a purchase of freehold property which was a hostel for those engaged on flying duties at Hatfield.

There had been an increase in the amount invested in subsidiary companies, which was due to further shares having been taken out in the de Havilland Aircraft Co. of South Africa (Pty.), which company had shown a pleasing increase in business.

Turning to the profit and loss account, the chief item of interest was the increased gross profit, which stood at £104,629 3s. 4d.

The directors considered that it was preferable that the shares of the company should be "officially quoted" on the Stock Exchange, which would tend to cause them to be held in higher esteem in financial circles and assist in the making of a freer market in the shares.

Turning to the company's foreign interests, the chairman said that the general business in Canada had been at an extremely low ebb, and he regretted that there had been a further reduction in the amount of business done by the Canadian company. The profit and loss account, however, showed a large improvement over that of last year. The de Havilland Aircraft Company of Australia had made a small loss, though their year's working showed a slight increase in sales, and the company, in general, is in a better position than it has been for some years. The South African factory had increased its business, as already mentioned. The Indian branch had made a small profit and was improving its general business.

Mr. Butler then dealt with the success of the "Dragon." One of its most notable achievements, he said, was on the London-Paris air route operated by Hillman's Airways, where 100 per cent. reliability had been maintained. A quantity of these machines had been purchased by the Iraqi government for military uses. "Dragons" had been sold outside the British Isles in Africa, Algiers, Australia, Canada, Czechoslovakia, Egypt, France, India, Iraq, Persia, and Spain. The "Leopard Moth," built to replace the "Puss Moth" had won the King's Cup, and good business had been done with the "Fox Moth" and the ordinary "Moth" in various forms. Orders for the "Tiger Moth" had been received from Persia, Brazil, China, Denmark, Poland, Portugal, and Spain.

In conclusion the chairman mentioned the removal of the London Aeroplane Club to Hatfield, the de Havilland School of Flying and the securing of a new contract with the Air Ministry for the training of reserve officers. He formally moved the adoption of the accounts and balance-sheet as submitted and the payment of a dividend at the rate of 7½ per cent., less income tax at the rate of 5s. in the pound.

THE ROYAL AIR FORCE

London Gazette, January 2, 1934

General Duties Branch

Group Capt. J. T. Cull, D.S.O., is placed on half-pay list, scale A (Jan. 2); Sqdn. Ldr. F. R. Alford, M.C., is placed on half-pay list, scale A (Dec. 26, 1933); F/O M.R. Kelly takes rank and precedence as if his appointment as Flying Officer bore date Aug. 22, 1930, immediately following F/O G. P. Longfield on the gradation list—reduction takes effect from Nov. 15, 1933; Air Commodore R. P. Ross, D.S.O., A.F.C., is placed on retired list at his own request (Jan. 1); Flt. Lt. R. F. Part is placed on retired list on account of ill-health (Jan. 1).

The follg. Flying Officers are transferred to Reserve, class A:—C. R. Crow, J. S. Douglas, E. Esmonde, J. W. C. Glen, D. B. Knapp, H. V. L'Amey, A. E. V. Mathias, A. T. Orchard, T. J. Rees, E. G. Sharp, J. A. Simpson (Dec. 28, 1933); O. P. E. Williams (Dec. 29, 1933). The follg. Flight Lts. are transferred to Reserve, class A (Jan. 3):—G. A. Simons, H. Thomas.

Memorandum

F/O G. J. Ross is removed from retired list (Dec. 21, 1933).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander F. H. Coleman, D.S.O., to H.Q. Coastal Area, Lee-on-Solent, 21.12.33 for Personnel Staff duties, vice W/Cdr. L. C. Keeble.

Squadron Leaders: E. B. C. Betts, D.S.C., D.F.C., to No. 101 (B) Sqdn., Andover, 21.12.33 to Command, vice W/Cdr. F. H. Coleman, D.S.O. H. J. Collins, to R.A.F. Base, Gosport, 20.12.33, for Flying duties with Base Training Sqdn., vice S/Ldr. N. P. Dixon, A.F.C. C. St. Noble, to H.Q., Fighting Area, Uxbridge, 21.12.33, for Equipment (Engr.) Staff duties, vice S/Ldr. R. E. G. Fulljames, M.C. C. R. Keary, to R.A.F. Base, Kai Tak, 6.11.33, to Command, vice S/Ldr. P. C. Wood. C. E. H. James, M.C., to Air Ministry, Dept. of Air Member for Personnel (D.D.M.), 29.12.33, for Personnel Staff duties vice F/Lt. E. B. Addison. A. Rowan, to Aeroplane and Armament Experimental Establt., Martlesham Heath, 28.12.33, for duty as Adjutant. J. F. Gordon, D.F.C., to Aircraft Depot, Iraq, Hinaidi, 22.12.33, for Administrative duties, vice S/Ldr. L. M. Iles, A.F.C.

Flight Lieutenants: C. S. Cadell, to No. 2 (A.C.) Sqdn., Manston, 19.12.33. M. H. Garnons-Williams, to Anti-Aircraft Co-operation Flight, Biggin Hill, 29.12.33. F. G. S. Mitchell, to No. 4 (A.C.) Sqdn., S. Farnborough, 20.12.33.

ROYAL AIR FORCE RESERVE

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

F/O A. G. Lamplugh is transferred from class A to class C (Dec. 30, 1933). The follg. Flying Officers relinquish their comms. on completion of service and are permitted to retain their rank:—H. Hollick-Kenyon (Oct. 2, 1933); J. H. Parry (Dec. 18, 1933).

Medical Branch

Flt.-Lt. P. A. Carrie, M.B., relinquishes his commn. on completion of service (Dec. 22, 1933).

SPECIAL RESERVE

General Duties Branch

M. A. Smith is granted a commn. as Pilot Officer on probation (Jan. 2); Pilot Officer on probation J. A. Robinson is confirmed in rank (Nov. 19, 1933).

J. S. Nichol, to No. 21 Group H.Q., West Drayton, 22.12.33. J. A. P. Harrison to No. 5 Flying Training School, Sealand, 30.12.33.

Flying Officers: R. J. Cohen, to Station H.Q., Mount Batten, 27.12.33. C. H. Mallinson, to No. 10 (B) Sqdn., Boscombe Down, 28.12.33. D. McD. Fenton, to H.Q., Western Area, Andover, 1.12.33.

Pilot Officer J. W. Young, to No. 9 (B) Sqdn., Boscombe Down, 29.12.33.

Stores Branch

Squadron Leader W. A. Glasper, to H.Q., Western Area, Andover, 19.12.33, for Equipment (Stores) Staff duties, vice S/Ldr. W. Thorne.

Flight Lieutenant C. W. Rugg, to Administrative Wing, Halton, 22.12.33.

Medical Branch

Wing Commander A. J. Brown, D.S.O., to H.Q., Western Area, Andover, 23.12.33, for duty as Principal Med. Officer.

Flight Lieutenants: V. H. Tompkins, to No. 31 (A.C.) Sqdn., Quetta, India, 16.11.33. J. F. Sandow, to No. 20 (A.C.) Sqdn., Peshawar, India, 19.12.33. J. F. S. Wiseman, to Station H.Q., Upper Heyford, 28.12.33.

Chaplains' Branch

Rev. A. G. Kayll, to R.A.F. Base, Calshot, 11.12.33, for duty as Chaplain (C. of E.) vice Rev. G. H. Collier; on appointment to a Short Service Commn.

Examinations for Civil Air Navigators' Licences

PROVIDED a sufficient number of applications is received: (a) a full examination for First Class Air Navigators' Licences will be held, in London only, on Monday to Friday, March 19-23, 1934, inclusive. (b) facilities will also be given at centres abroad for candidates to sit, for the written papers only, on Monday to Wednesday, March 19-21, 1934, inclusive, in the case of those candidates who can satisfy the Air Ministry that they can present themselves in London prior to March 1, 1935, for the practical tests. The failure of any candidate, through any cause whatsoever, to present himself in London for the practical tests within the period stated will unconditionally render the candidate liable to sit again for the whole examination.

An examination for Second Class Air Navigators' Licences will also be held on Monday to Thursday, March 19-22, 1934, inclusive, at the following centres: (a) London (at a centre to be announced later); (b) Heliopolis (the office of the British Aviation Directorate Representative in Egypt, Heliopolis Aerodrome); (c) Baghdad (Hinaidi Aerodrome); (d) Singapore (Seletar Aerodrome).

The establishment of an examination centre in India is at present under consideration. Prospective candidates should forward their applications to the Director of Civil Aviation in India, Department of Industries and Labour, New Delhi.

Application forms, syllabi and the conditions of examination may be obtained on application in writing to (i) the Secretary, Air Ministry (C.A.2), Adastral House, Kingsway, London, W.C.2, (ii) the British Civil Aviation Directorate Representative in Egypt, Heliopolis Aerodrome, Heliopolis, Egypt, or (iii) the British Civil Aviation Directorate Representative at Singapore, Royal Air Force Headquarters, Singapore, Straits Settlements.

Formal applications for permission to attend these examinations must be made on Form C.A.2.c. and, together with the prescribed fees, must have been received at the appropriate address: (a) in the case of the First Class examination to be held in London, not later than Monday, February 19, 1934, (b) in the case of the First Class examination (written papers only) at centres abroad, not later than Monday, January 22, 1934, and (c) in the case of the Second Class examination (London and abroad), not later than Monday, February 19, 1934.

In no circumstances can late applications be considered. Applications to sit for the examination should be lodged with: (a) For the London centre: The Secretary, Air Ministry (C.A.2), Adastral House, Kingsway, W.C.2; (b) For the Heliopolis centre: The British Civil Aviation Directorate Representative in Egypt, Heliopolis Aerodrome, Heliopolis, Egypt; (c) For the Baghdad centre: The Air Officer Commanding, Iraq Command, Royal Air Force, Air Headquarters, Hinaidi, Iraq; (d) For the Singapore centre: The British Civil Aviation Directorate Representative at Singapore, Royal Air Force Headquarters, Singapore, Straits Settlements.

New rank in the R.A.F.

OUR printers invented a new R.A.F. rank last week. Sqd. Ldr. Soden's initials happen to be F. O. The result was a caption, on page 9, which gave that distinguished officer the rank of Sqd. Ldr. F/O Soden. A certain number of copies were printed before the mistake was discovered, and to those of our readers who happened to get these copies we offer apologies, as well as to

Candidates should give, with their formal application, full details of any qualifications and experience they already possess.

Before a licence can be issued, candidates must pass the prescribed medical examination, for which special arrangements will be made where necessary.

Copies of the papers set at previous examinations for Second Class Air Navigators' Licences may be obtained from His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C.2, or through any bookseller, as follows:—Papers set at the six examinations held in October, 1930, July, 1930, March, 1930, October, 1929, December, 1928, and April, 1928, bound in one volume, price 2s. net, or 2s. 4d. post free, inland. Papers set at the examination held in March-April, 1931, price 6d. net, or 8d. post free, inland. Papers set at the examination held in October, 1931, price 6d. net, or 8d. post free, inland. Papers set at the examination held in March, 1932, price 6d. net, or 8d. post free, inland. Papers set at the examination held in October-November, 1932, price 6d. net, or 8d. post free, inland. Papers set at the examination held in March, 1933, price 6d. net, or 8d. post free, inland.

Copies of the papers set at previous examinations for First Class Air Navigators' Licences may be obtained free of charge on application to the Secretary, Air Ministry (C.A.4), Adastral House, Kingsway, London, W.C.2.

The attention of candidates is drawn to the following: (a) *International Legislation*.—A list of the United Kingdom air navigation regulations, etc., in force will be published in Notice to Airmen No. 2 of 1934. (b) *Maps*.—The War Office "Manual of Map Reading, Field Sketching and Air Photography," published by His Majesty's Stationery Office, price 3s. net, or 3s. 4d. post free, is recommended as an additional book for study. (c) *Air Navigation*.—A new "Manual of Air Navigation" has been published by His Majesty's Stationery Office, price 8s. 6d. net, or 9s. post free, inland. This publication will be found to be a valuable supplement to the "Manual of Air Pilotage, 1930." (d) *Visual Signalling*.—Candidates will be examined in the new Procedure for flashing and semaphore laid down in Part I of the International Code of Signals, 1932. This procedure will be found in the 1933 edition of "Brown's Signalling." Candidates are recommended to study Chapters II, III, VII, VIII and IX. A.M. Pamphlet No. 44 is being amended accordingly.

A further examination for Second Class Air Navigators' Licences will be held during October, 1934. An examination for First Class Licences will also be held in March, 1935, if a sufficient number of applications is received.

The Air Force List

THE January issue of the Air Force List has now been published. It can be purchased (price 2s. 6d.) from H.M. Stationery Office at the following addresses:—Adastral House, Kingsway, London, W.C.2; 120, George Street, Edinburgh; 2, York Street, Manchester; 1, St. Andrew's Crescent, Cardiff; 15, Donegall Square, Belfast; or through any bookseller.

Sqd. Ldr. Soden for the unique rank conferred upon him.

Decrease in R.A.F. accidents

IN R.A.F. statistics published lately there is shown a considerable decrease in accidents for miles flown. In the year 1921 the total mileage of the R.A.F. was 5,000,000 miles, and there were 22 fatal accidents. In the year 1933 over 40,000,000 miles were flown with only 39 fatal accidents.

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

THOSE ELECTRIC PYLONS

[2904] The deplorable accident over the last week-end to the air liner in Belgium due to fog conditions raises afresh the problem of fog flying.

It does seem extraordinary that progress so frequently requires the stimulus of disaster to incite the powers-that-be into some semblance of activity. For years everybody has been going about saying that sooner or later aerial disasters will result from the erection of wireless transmitting stations and the use of high pylons conveying high-pressure electric current over the land, but one has to admit that nothing practical is done to meet this obvious menace.

Now that this unfortunate stimulus has been given to a reconsideration of the whole question, may I once again advance the proposition I put in various ways frequently in the past—that the only practical solution is to equip all obstructions such as high buildings, wireless masts, and the like, which are situated along well-determined commercial air routes, with a wireless transmitter of short range capacity, probably preferably of a very short wavelength, but whatever wavelength is adopted, a uniform one, and that all commercial aircraft should be fitted with a receiver tuned permanently to this wavelength with possibly both aural as well as visual reception. Then in cases of thick weather, just as street lamps when it becomes dark, these transmitters will be switched on, and the pilots of commercial machines would receive adequate warning automatically, and one which it would be easy to arrange that they could not ignore.

I suggest that the obvious development of this idea be that the machines themselves should be fitted with the same transmitter permanently tuned to the one wavelength so that the chances of collision between commercial aircraft flying in thick weather will be practically eliminated.

In a country such as America there are obviously no difficulties, if the idea is practicable, in carrying it into effect, but in Europe it means co-operation between a number of Governments if it is to be of any practical value whatsoever.

I have racked my brain to think of vested interests which might object to such co-operation, but no legitimate ones have occurred to me. Therefore, is it too much to expect that on a subject which is in everybody's interests, and which would not seem to hurt anyone, that an effort should be made with despatch unusual in these matters, to determine what is to be done, how it is to be done, when it is to be done, and then get it done.

If the League of Nations could accomplish this small practical contribution to the betterment of the conditions of mankind, I think they would have justified themselves.

E. C. GORDON ENGLAND.

London, S.W.1.

January 4, 1934.

THE AUSTRALIAN TERMINUS

[2905] In your Editorial comment of September 28, 1933, you discuss the choice of Cootamundra as the terminus of the England-Australia air mail service. The whole tone of your article is definitely against Cootamundra, and as I realise the benefits which will accrue if this town is retained as the terminus of the trunk line, I will put forward a few words in its defence.

There are two main factors which influenced the Federal Government in their selection of Cootamundra. The first is its important geographical position as the half-way centre between Melbourne and Sydney, and the second is its excellent natural aerodrome. At present the aerodrome is just under 120 acres, but it could be greatly enlarged by simply removing trees and fences. Moreover, there is a gentle slope from north to south, so that the draining is quite natural.

It must not be expected that Cootamundra will remain the final terminus for long. It will develop, providing the operating company which secures the tender realises its potentialities, into a great central airport with lines branching out to Sydney and Melbourne, and later to Adelaide and Canberra.

It will be seen, therefore, that the next move is for the

operating company. It should establish branch services to Melbourne and Sydney to cater for the passengers, both inward and outward bound, for the traffic will naturally be directed towards these two cities. It will only be a matter of time then till the Government entrusts it with the distribution of mails and subsidises it accordingly.

By employing Cootamundra as a central airport, a great deal of time will be saved, especially for Melbourne, Adelaide and Canberra.

It will thus be seen that Cootamundra has distinct possibilities as an airport, and I hope that this letter has given you a clear idea of the position.

K. A. MACKAY BALDRY.

Church Hill, Cootamundra,
December 5, 1933.
Australia.

PUBLICATIONS RECEIVED

Shell Aviation News. No. 30. Dec., 1933. W. Hill, St. Helens Court, Great St. Helens, London, E.C.3.

Illustrated Calendar for 1934. The Blackburn Aeroplane and Motor Co., Ltd., Amberley House, Norfolk Street, Strand, London, W.C.2.

Jane's All the World's Aircraft, 1933. Edited by C. G. Grey. Compiled by L. Bridgman. London: Sampson Low, Marston & Co., Ltd. Price £2 2s. net.

Light Alloys for Aeronautical Purposes with Special Reference to Magnesium. By Leslie Aitchison, D.Met., B.Sc., F.I.C. Paper read before the Royal Aeronautical Society, 7, Albemarle Street, London, W.1. Price 6d.

Bartholomew's Automobile Map of Eastern Europe. Edinburgh: John Bartholomew & Son, Ltd. Price 6s. net.

Map of the Middle East. Bartholomew's General World Series. Edinburgh: John Bartholomew & Son, Ltd. Price 6s. net.

Sur la possibilité de décollage et d'atterrissage des avions à l'aide d'une fusée. By M. Gustave André Mokrzycki. Gauthier-Villars, Quai des Grands-Augustins, 55, Paris.

Annual Report of the Board of Regents on the Smithsonian Institution for the Year Ending June 30, 1932. Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., U.S.A. Price 70 cents.

Hotels in Great Britain: 1934. The Travel and Industrial Development Association of Great Britain and Ireland, Kinnaird House, 1, Pall Mall East, London, S.W.1.

Calendar of Events in Great Britain and Ireland: 1934. The Travel and Industrial Development Association of Great Britain and Ireland, Kinnaird House, 1, Pall Mall East, London, S.W.1.

Air Mail Labels (Etiquettes). Francis J. Field, Ltd., Sutton Coldfield. Price 3d.

International Index to Aeronautical Technical Reports. Prepared by The Society of British Aircraft Constructors, Ltd. The Royal Aeronautical Society, 7, Albemarle Street, London, W.1. Price 5s.

The Aeronautical Work of Lawrence Hargrave. By T. C. Roughley, B.Sc. Bulletin No. 19. Technological Museum, Technical Education Branch, Department of Education, Sydney. A. J. Kent, Government Printer, Sydney, New South Wales, Australia. Price 1s.

Something New Out of Africa. By "H.W." London: Sir Isaac Pitman & Sons, Ltd. Price 15s. net.

Diaries for 1934

Air Survey Co., Ltd., Hayes, Middlesex.
Derluft Deutsch-Russische Luftverkehrs-Gesellschaft, Lindenstrasse 35, Berlin.

1934 Calendars

Gale and Polden, Ltd., 2, Amen Corner, London, E.C.4.
The Chancery Printing and Stationery Co., Ltd., Gloucester House, Gloucester Street, London, E.C.1.

Smith, Greenfield and Co., 40, Borough High Street, London, S.E.1.

F. J. Parsons, Ltd. (Proprietors of *Hastings Observer*, *Bexhill Observer*, *Folkestone Herald*, *Sussex Express*), 329, High Holborn, London, W.C.1.

H. J. Ryman, Ltd., 183, Strand, London, W.C.2.

Air Taxis, Ltd., Air Port of London, Croydon, Surrey.

Saunders-Roe, Ltd., Cowes, Isle of Wight.

Noakes Brothers, Ltd., 16, New Street Square, London, E.C.4.

NEW COMPANY REGISTERED

J. GRANVILLE GRENFELL, LTD.—Brooklands Aerodrome, Byfleet, Surrey. Capital, £200 in £1 shares. Objects, to construct and rebuild self-propelled vehicles, manufacturers of and dealers in aeroplanes, boats, foundry work, etc. Directors: John Granville Grenfell, 30, St. Andrews Avenue, Sudbury, Mdx. John T. Risdon, Innisfree, Dropmore Road, Burnham, Bucks.

PATENT AERONAUTICAL SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motors (The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1932

Published January 11, 1934

19,945. R. J. McLAUGHLIN. Flying machines. (403,157.)
20,816. FAIRLEY AVIATION CO., LTD., and W. BROADBENT. Means indicating the angular position of an airscrew blade in its hub. (403,163.)
26,439. HEENAN & FROUDE, LTD., and G. H. WALKER. Variable-pitch propellers. (403,199.)

APPLIED FOR IN 1933

Published January 11, 1934

5,547. C. T. DELANEY. Supercharging of i.c. engines. (403,245.)
7,166. C. B. STRANDGREN. Feathering paddle wheels for aerodynamic purposes. (403,253.)
24,090. A. F. WALLIN. Jet device for propelling vessels. (403,343.)